Joey T. Cheng · Jessica L. Tracy
Cameron Anderson *Editors*

The Psychology of Social Status

Springer

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Preface and Acknowledgments

There has never been a more exciting time to study social status and hierarchy. Over the past several decades, researchers from across the social sciences have come to recognize the importance, complexity, and ubiquity of individual differences in social rank. These scholars have made great strides in shedding light on such fascinating yet long perplexing questions as: Why are societies everywhere structured hierarchically? What function might hierarchy serve, for individuals and for groups? How do rank differences emerge, and what determines who rises to the top? What are the psychological, neural, and hormonal mechanisms that underlie status attainment? What are the consequences of high and low rank on relationships, mating, and reproductive success? Psychologists, neuroscientists, health researchers, sociologists, anthropologists, and management scientists are working together to seek answers to these questions, and to build a comprehensive and interdisciplinary science of the psychological underpinnings of social status.

This volume was conceived several years ago when we were attending the annual Society for Personality and Social Psychology (SPSP) conference, the single largest annual meeting place for social and personality psychologists. As researchers broadly interested in the psychology of social status and rank dynamics, we were naturally attracted to many symposia sessions and presentations themed around the topic of power and status. One thing we noticed, however, was that the research agenda seemed to be dominated, to a certain extent, by *power*—or institutionally driven rank differentials (exemplified by a boss/employee relationship)—to the neglect of research on social status and dominance—or naturally emerging hierarchical differences that arise in everyday interpersonal relationships. Further reflecting this state of affairs, an excellent volume reviewing the extant literature on power was published several years ago (Guinote and Vescio 2010), but the present volume marks the first comprehensive review of research on the psychology of status and broader rank-attainment processes.

Although there are important similarities between power and status, the two concepts are quite notably distinct. Whereas status refers to a form of influence and control that arises spontaneously in everyday social situations, power involves formally endowed control over valued resources, often resulting from institutionally legitimized positions in the workplace, politics, or broader society. As a result,

while many of the consequences may be similar, the psychological underpinnings of status and related processes are unique from those that lead to power. Given this distinction, we believed that the field was in need of a book dedicated to the large bodies of research that have emerged on status and naturally occurring social rank.

With this volume, our goal was to showcase the major foundational insights that have emerged to date on the psychology of social status. The scientific study of status—which began over 40 years ago with classic studies in sociology by Berger, Ridgeway, Driskell, and others—has grown tremendously in recent years. Many of the most influential psychology papers on the topic—such as those by Tiedens, Anderson, and Willer, to name a few—were published within the last 15 years. Moreover, the study of status has become an interdisciplinary enterprise, crossing the boundaries of sociology, psychology, organizational science, anthropology, and other fields. Essential to this volume is the inclusion and synthesis of these inter-disciplinary approaches. Among the 16 chapters included are the latest perspectives and cutting-edge empirical findings from across these disciplines; contributors include social, personality and evolutionary psychologists, organizational scientists, sociologists, and anthropologists. Furthermore, all of these contributors are leading experts in the field, whose work has broken theoretical and empirical ground. It is our hope that this collection will provide a one-stop shop for those who wish to learn about the latest and most important developments in this flourishing area of research.

This volume is divided into five sections. The first section provides an over-view of prominent overarching theoretical perspectives that have shaped much of the current research agenda on social status. These chapters lay out the theoretical foundations for much of the rest of the work presented in the volume, and address core questions about the nature of social status and hierarchy. In Chap. 1, Cheng and Tracy explore the evolutionary origins of human status hierarchies, and review a large body of evidence supporting the Dominance-Prestige theoretical account. According to this model, there are two fundamental pathways to social rank attainment in human societies: dominance (inducing fear in others) and prestige (gaining others' respect). In Chap. 2, Barkow explores the evolutionary emergence of prestige, and discusses the pivotal role of culture and cultural transmission in the rise of complex, socially stratified groups and societies, from an anthropological perspective. Complementing these chapters on the distal forces that favor the emergence of hierarchical relationships, in Chap. 3 Anderson and Willer offer a broad account of the proximal drivers of status allocation. They argue that, although humans are motivated to develop hierarchies based on prestige—by allocating social rank only to the most skilled and committed group members—their ability to do so is constrained by a number of interesting psychological biases and traps. Finally, in Chap. 4 Blader and Chen synthesize across these distinct theoretical perspectives to explore the multidimensional nature of hierarchical relationships, with a close review of the conceptual overlap and distinctions among these diverse forms of hierarchy. This chapter helps to explain the different ways in which researchers have conceptualized each of the key constructs relevant to the central topic of this

volume: status, power, influence, socioeconomic status, leadership, dominance, and prestige.

The second section of the volume examines the personality, demographic, situational, psychological, emotional, and cultural underpinnings of status attainment. This section, in essence, addresses questions about who attains status, and why. In Chap. 5, Anderson and Cowan survey the extant empirical research on the personality determinants of status attainment. They find that high status individuals consistently exhibit lower neuroticism but greater extraversion, dominance, and self-monitoring, and, in some group contexts, greater conscientiousness, narcissism, and openness to experience. Moving beyond personality, in Chap. 6 Blaker and van Vugt examine the link between physical stature and social status. Their review indicates that physical attributes such as height and muscularity promote rank, but through different mechanisms. Whereas tall individuals acquire status via both dominance and prestige, the high rank of muscular individuals results from dominance. In Chap. 7, Kafashan, Sparks, Griskevicius, and Barclay explore the complex bidirectional associations between prosocial behavior and status attainment. Certain forms of prosocial behavior, they suggest, both influence and is affected by status gains to a greater extent than others.

In Chap. 8, Leary, Jongman-Sereno, and Diebels offer insights into the psychological processes that underpin individuals' pursuit of status, and focus specifically on the role of impression management—the attempt to shape and influence one's reputation and public perception. Their theoretical analysis shows that acts of self-presentation are not only pervasive in status pursuits, but also entail a delicate and difficult balance between the often conflicting goals of getting ahead and getting along. In Chap. 9 von Rueden addresses the universality of social hierarchy from a cultural anthropological perspective. As his review of ethnographies and recent empirical work in small-scale societies reveals, hierarchy is a human universal, found even in highly egalitarian foraging and horticultural societies. Interestingly, status in these populations is largely determined by a similar suite of factors observed in industrial societies—such as skill and generosity, or prestige more broadly, as well as physical stature. He shows that men's status bears important consequences for his reproductive success. Finally, in Chap. 10 Steckler and Tracy provide an in-depth overview of the distinct emotional underpinnings of status hierarchy. They highlight the critical functions that basic emotions—such as happiness, sadness, anger, disgust, and fear—and more complex social emotions—pride, shame, envy, contempt, and admiration—serve in facilitating hierarchy navigation.

The volume's third section focuses on the intra- and inter-personal benefits and costs of possessing and lacking status, examining the downstream consequences of high and low status on cognition, self-perception, and interpersonal and inter-group relations. In Chap. 11 Fast and Joshi explore two fundamental cognitive forces—subjective sense of control and role expectations—that are triggered by high rank, and examine the benefits and barriers that these forces present in organizational settings. They argue that these rank-related cognitions are not always advantageous, and in fact often create surprising barriers for those atop the social hierarchy in domains such as decision-making, task performance, social relationships, and well-

being. Broadening the scope to status hierarchies that exist at a societal level, in Chap. 12 North and Fiske discuss prevailing sociological and psychological insights into social inequality. Their review highlights the socio-structural forces, cultural stereotypes, and other psychological biases that jointly create and sustain social inequality and prejudice among groups who differ in race, gender, age, weight, sexuality, and social class.

The volume's fourth section reviews emerging research on the biological and bodily manifestation of status attainment, identifying specific endocrinologies, neural systems, and nonverbal behaviors that create and reflect status differences. In Chap. 13, Knight and Mehta review the mounting empirical findings on the neuroendocrinologies that underpin hierarchical differences. This body of research provides compelling evidence for complex reciprocal relations between status attainment and a number of hormones—namely testosterone, cortisol, estradiol, and oxytocin—in both humans and nonhuman animals. In Chap. 14 Pornpattananangkul, Zink, and Chiao provide an overview of research on the neural networks and patterns that encode status-related information in the human brain. Their review indicates that the serotonergic and dopaminergic neurotransmitter systems—which are regulated by intricate gene-by-environment interactions—play pivotal roles in facilitating the perception, recognition, and expression of dominance and submission patterns in humans and other species. In Chap. 15, Hall, Latu, Carney, and Schmid Mast summarize the large bodies of research on the nonverbal expression of status. As they show, high and low relative rank are each associated with distinct nonverbal cues emitted from the face, eyes, body, and voice. By signaling one's rank position to others and activating rank-related cognitions and behavioral patterns, these cues both shape and reflect individuals' rank in complex yet predictable ways.

Finally, the fifth section of the volume is comprised of a single stand-alone chapter by Cheng, Weidman, and Tracy, which provides a broad review of available research methods for measuring and experimentally manipulating social status. The goal of this review is to provide researchers with an easy-to-access means of determining how best to measure or manipulate the status-related constructs in which they are interested. Together, these 16 chapters collectively form what we hope to be a useful resource for researchers, students, policy-makers, and others interested in learning about the remarkable proliferation of knowledge that has accumulated across many decades of research, along with the latest and most exciting theoretical and empirical insights into human social status dynamics.

A volume of this scope would not have been possible without the help of many individuals. First and foremost, we are extremely grateful to each and every one of the volume's contributors, who generously devoted their time and energy to this project. Our heartfelt appreciation also goes to the editors at Springer, in particular Morgan Ryan and Anna Tobias, for their encouragement and support throughout this project. Finally, we thank our publisher, Springer, without whom this effort would not be possible.

February 2014   Joey T. Cheng
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Part I
Theoretical Perspectives: The Nature of Social Status and Hierarchy

Chapter 1
Toward a Unified Science of Hierarchy: Dominance and Prestige are Two Fundamental Pathways to Human Social Rank

Joey T. Cheng and Jessica L. Tracy

Although affiliative and cooperative interactions form the primary fabric of human social relationships, group living necessarily entails conflict over divergent goals and competition over scarce resources. The formation of social hierarchies, an organizational structure observed across many species in the animal kingdom and ubiquitous to human groups, presents a solution to these conflicts. Although the bases on which humans form hierarchies and allocate rank are diverse, hierarchies are fundamentally social structures in which high-ranking individuals reliably receive greater influence, deference, attention, and valued resources than low-ranking others (Homans 1950, 1961; Magee and Galinsky 2008; Mazur 1973, 1985; Strodtbeck 1951; Zitek and Tiedens 2012). By affording high-ranking individuals privileged influence and access to valued resources such as mates and food, mutually accepted hierarchical relationships minimize costly agonistic conflicts, establish order, and facilitate coordination and cooperation among individuals in groups (Báles 1950; Berger et al. 1980). Indeed, a substantial body of evidence indicates that stable social hierarchies, in which subordinates defer to rather than dispute or contest their high-ranking counterparts, generally result in better group coordination and performance and more satisfying relationships (e.g., Halevy et al. 2011; Kwaadsteniet and van Dijk 2010; Ronay et al. 2012; Tiedens and Fragale 2003; Tiedens et al. 2007; see also Anderson and Willer, Chap. 3, this volume).

Despite the fundamental importance of social hierarchies to human relationships, however, questions remain about the processes that allow individuals to attain rank and the factors that determine rank allocation. Although an extensive literature has documented a wide range of micro-level attributes and behaviors that influence rank attainment, these findings lack a coherent, unifying framework integrating the various data points into a comprehensive and theoretically supported understanding of rank differentiation. To address this disparity, we have adopted a parsimonious

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and empirically supported evolutionary model, the Dominance-Prestige Account (Cheng et al. 2010, 2013a; Henrich and Gil-White 2001), which we believe can unify the diverse extant findings. This account proposes that differences in hierarchical rank within human social groups are the result of both: (a) coerced deference to dominant others who induce fear by virtue of their ability to inflict physical or psychological harm (i.e., Dominance) and (b) freely conferred deference to prestigious others who possess valued skills and abilities (i.e., Prestige).

This chapter provides a broad review of the extant research regarding rank allocation processes, by surveying findings from the major disciplines that have studied human rank dynamics empirically, including psychology, sociology, management science, and anthropology. We argue that the Dominance-Prestige Account can be fruitfully applied to organize these diverse empirical findings—including those that appear, at first glance, to be conflicting. The Dominance-Prestige Account not only allows for and predicts the diversity of results that have emerged in the prior literature, but also goes beyond many prior descriptive accounts to provide a deep theoretical *explanation* for the extant body of work.

It is important to note that, in contrast to many other chapters in this volume that focus more specifically on one particular dimension of social rank involving respect and admiration (often referred to as *status*; e.g., Anderson and Kilduff 2009a), our focus is on the determinants of *social rank* broadly construed, a concept that reflects the degree of influence one possesses over resource allocation, conflict resolution, and group decisions (Berger et al. 1980; for further discussion of hierarchy-related conceptual terms, see Blader and Chen, Chap. 4, this volume; Cheng et al. 2013e).

The present review is organized into three sections. *First*, we discuss the key tenets of the Dominance-Prestige Account, outlining the selection pressures theorized to favor the evolution of these two distinct forms of social rank inequalities in humans, and the psychological processes that underpin them. *Second*, we discuss findings from our own recent work that directly support this account, by demonstrating (a) the co-existing effectiveness of Dominance and Prestige in promoting social rank and (b) the distinction between Dominance and Prestige as separate rank-attainment processes, wherein each is underpinned by a distinct suite of personality profiles, emotional mechanisms, behavioral patterns, cognitions, neuroendocrine profiles, and fitness outcomes. *Third*, we summarize a number of predictions that the Dominance-Prestige Account entails regarding the relevance of a wide range of narrow, lower-order traits, and attributes to rank attainment, and examine the fit of these predictions to the prior empirical literature. Taken together, this substantial body of research converges to suggest that intimidation and respect co-exist as two fundamental yet distinct bases of rank differentiation in human societies.

The Dominance-Prestige Account of Social Rank Differentiation

The Dominance-Prestige Account (Henrich and Gil-White 2001) holds that social hierarchies are multidimensional, arising from two systems of rank allocation. In contrast to prior accounts of hierarchy differentiation (e.g., Anderson and Kilduff

2009a; Berger et al. 1972; Lee and Ofshe 1981; Magee and Galinsky 2008; Mazur 1973), the Dominance-Prestige Account argues explicitly, on the basis of evolutionary logic, that *both* avenues persist in contemporary human groups, and produce patterns of behaviors and tactics that effectively promote influence over others, even when wielded within the same social group.

First, *Dominance* entails the induction of fear, through intimidation and coercion, to attain or maintain rank and influence, and is thought to be homologous with dominance hierarchical systems in nonhuman primates that result from agonistic contests (Chase et al. 2002; Rowell 1974). In humans, Dominance can be observed in dyadic social relationships based on coercion, such as those between police and citizen, bully and victim, or boss and employee, as well as in larger social structures. Dominant individuals effectively instill fear in subordinates, typically through threats that are more psychological than physical. For example, those with formal institutional power, such as employers, can evoke fear in subordinates by threatening to provide or withhold resources. Subordinates respond by complying with the demands of Dominant individuals to safeguard their well-being and resources. Consequently, Dominance begets substantial social influence, rooted in coercive compliance. It is theorized that Dominance arose in evolutionary history in response to agonistic conflicts over material resources (e.g., food, mates), which were common among nonhuman species, but also persist in contemporary human societies in the form of psychological conflicts. By regulating patterns of domination-deference, Dominance hierarchies facilitate coordination and minimize the frequency of agonistic encounters and associated costs, and, as a result, enhance the fitness of all parties involved. It is noteworthy that numerous others have previously argued for the importance of Dominance-related processes in hierarchy formation, typically pointing to the prevalence of agonistic contests in human social life, as well as the tendency for competitive outcomes to govern patterns of domination and subordination in virtually all animals species (e.g., Chagnon 1983; Mazur 1973, 1985; Lee and Ofshe 1981; Mazur and Booth 1998). In contrast to prior models, however, the present account proposes that coercion and intimidation are *not* the only means to human social-rank attainment; rather, a secondary pathway, termed Prestige, is thought to co-exist and operate concurrently.

Prestige refers to influence that is willingly granted to individuals who are recognized and respected for their skills, success, or knowledge. Subordinates seek out the opinions and company of Prestigious individuals in efforts to imitate and learn their superior skills or knowledge. As a result, the Prestigious are conferred with influence and rank, which in their cases rests on freely conferred deference and genuine persuasion, rather than forced compliance. Prestige-based rank is thought to be unique to humans, because it relies on cultural learning, which is considered to be less developed in other animals (Boyd and Richerson 1985; Laland and Galef 2009). Learning from the most skilled group members is a low-cost way of acquiring fitness-maximizing knowledge, so the emergence of cultural learning in early human evolutionary history likely generated selection pressures to preferentially identify, attend to, and copy knowledge from highly skilled or successful others. These selection pressures would favor a psychological machinery capable of differentiating and ranking individuals along the dimension of skill (and, thus, Prestige), such that the highest quality cultural models with the greatest expertise are elevated to the top of the hierarchy.

The assumption that earned respect represents a fundamental path to rank attainment in humans is consistent with the predominant view of rank attainment within social psychology, which assumes that hierarchical differences result from groups members' rational and freely chosen decisions to confer rank upon those individuals who possess and offer the greatest skills and ability to contribute to the group (e.g., Anderson and Kilduff 2009a; Berger et al. 1972; Blau 1964; Thibaut and Kelley 1959; Ridgeway and Diekema 1989). In contrast to the Dominance-Prestige Account, however, this perspective holds that social influence is acquired only via this merit-based route, and cannot be acquired via force or coercion (e.g., Anderson and Kilduff 2009a; Barkow 1975; Ridgeway 1987; Ridgeway and Diekema 1989).

The distinction between Dominance and Prestige parallels Krackle's (1978) delineation of two kinds of leadership in simpler societies: "forceful" leaders, or domineering headmen who maintain their position and power through the induction of fear, threat, and compulsion, versus "persuasive" leaders, who lack formal authority but nevertheless exercise substantial influence that is dependent on the consent of their followers. Similar contrasts have also been observed by scholars distinguishing between "agonic" vs. "hedonic" behavior (Chance and Jolly 1970) and "resource-holding potential" vs. "social attention holding power" (e.g., Gilbert et al. 1995).

However, unlike these prior descriptive taxonomies, the Dominance-Prestige Account was theoretically derived and provides an evolutionarily based explanation of *why* these widely observed patterns occur. The strong theoretical basis of this account allows for the formulation of precise yet broad predictions regarding the suites of traits, emotions, cognitions, and behaviors expected to propel and underpin these two avenues to rank. Furthermore, this account is unique, in that it incorporates both our species' shared heritage with other primates who resolve conflicts through domination-subordination coordination, and our unique human nature as cultural beings who depend heavily on cultural learning (Henrich and Gil-White 2001). The account's breadth also gives it the potential to unify prior theoretical efforts and to integrate the somewhat scattered extant literature on power, status, and leadership into a coherent account, by parsing these prior results into Dominance- or Prestige-based processes.

Evidence Supporting the Dominance-Prestige Account

The account outlined above generates two key predictions about social-rank dynamics. *First*, Dominance and Prestige should concurrently promote social rank in groups. *Second*, because these two strategies are the products of distinct selection pressures, they should be associated with distinct underlying psychological processes and patterns of behavior. Here, we review findings from recent studies that directly tested these two predictions.

Dominance and Prestige Both Promote Social Rank

We recently tested the central theoretical prediction of the Dominance-Prestige Account—that both these pathways effectively promote social rank—by examining the impact of these broad-level status-attainment strategies on rank attainment in small groups (Cheng et al. 2013e). In the first of two studies, we assigned participants to small same-sex groups. These individuals independently completed a survival exercise (Bottger 1984), which involved rank-ordering 15 items (e.g., oxygen tanks, heating unit) in order of their utility for surviving a disaster. They next worked collectively as a group for 20 min on the same task. Upon completing the group task, participants privately rated each other (in a round-robin design) on perceived social influence, Dominance, and Prestige; peer-rated Dominance and Prestige were assessed via previously validated scales, which capture the extent to which group members experience fear and admiration, respectively, toward each other group member (see Cheng et al. 2010). We also obtained a behavioral measure of influence by computing the degree of similarity between each participant's *private* response on the survival task and the *group's* final response, under the assumption that influential members would more effectively sway the group toward adopting their opinions. Finally, upon the completion of all sessions, outside observers watched video-recordings of the group interactions and rated all participants on the same dimensions as the in-lab peers. In a second study, naïve observers watched these same video recordings while their gaze was monitored with an eye-tracking device, and subsequently rated each group member on Dominance and Prestige. Together, this approach generated four separate indices of social rank: (a) group member-ratings of social influence, (b) outside observer-ratings of social influence, (c) decision-making impact, and (d) visual attention received—which has been described as "the best framework for analyzing social rank as it takes into account all leadership styles" (Hold 1976, p. 179).

Results provided convergent support for the two proposed pathways to social rank: Individuals who adopted either a Dominance or Prestige strategy attained higher social rank. Specifically, not only were these individuals seen as more influential by both group members and outside observers, but they in fact exerted greater behavioral influence, as indexed by the measures of decision-making impact and attention. Furthermore, two other sets of findings provided evidence for the independence of these two rank-attainment pathways and their divergent psychological underpinnings. *First*, Dominance and Prestige were statistically independent, and the rank-promoting effect of each emerged even when controlling for shared variance with the other—suggesting that dominant individuals' ability to gain influence cannot be attributed to a tendency among group members to (incorrectly) perceive them as more competent or admirable (and by implication, Prestigious; cf., Anderson and Kilduff 2009b).

Second, findings from our more recent study provide direct evidence that—in contrast to Prestigious individuals, whose influence is predicated upon perceived competence and value—Dominant individuals' elevated rank results from others'

fear and *not* from a perception that they are contributing value to the group (Cheng et al. 2013a). Although Dominants tended to forcefully dominate group discussions by speaking longer and occupying the floor to a greater extent than Prestigious individuals in small task groups (Cheng et al. 2013e), in a recent study examining similar group interactions, we found that group members' perceptions of each other's contribution was much more strongly associated with Prestige ($r=.70$; $p<.001$) than with Dominance ($r=.29$; $p<.001$; $Z=-6.102$, $p<.001$). Moreover, replicating our previous finding, both Dominance and Prestige predicted greater group-member-rated influence (rs$=.48$ and $.52$; ps$<.001$). However, when perceived contribution was statistically controlled (using partial correlations), only the relation between Dominance and influence remained strong and significant ($r=.41$), and did not show a significant reduction in its magnitude ($Z=.97$, $p=.33$); the association between Prestige and influence after controlling for contribution ($r=.10$, $p=.13$), on the other hand, was substantially reduced ($Z=5.27$, $p<.0001$). Furthermore, consistent with our account, when fear experienced toward each individual ("I am afraid of him/her") was controlled for, the relation between Dominance and influence was not only significantly reduced in magnitude, but also no longer different from zero ($r=.09$, $p=.16$; $Z=3.73$, $p<.001$). In contrast, accounting for fear did not significantly alter the relation between Prestige and influence ($r=.56$, $p<.001$; $Z=-.66$, $p=.51$). These results indicate that while the apparent value and contribution provided by Prestigious individuals are vital to, and account almost entirely for, their rank attainment, these attributes do not explain the social influence of Dominant individuals, who gain and maintain rank *not* by contributing value to the group, but by inducing fear.

More broadly, these findings offer first evidence supporting the claim that Dominance leads to increased social rank, a contentious notion that has been the topic of considerable theoretical debate (see Anderson and Kilduff 2009a; Carli et al. 1995; Lee and Ofshe 1981; Ridgeway and Diekema 1989). Over two decades ago, in a series of methodologically similar studies (e.g., Carli et al. 1995; Copeland et al. 1995; Driskell et al. 1993; Ridgeway 1987; Ridgeway and Diekema 1989), the opinions advocated by confederates who displayed domineering behaviors—such as dismissive and contemptuous speech, or a looming posture and angry tone—were consistently found to be no more readily adopted than those of confederates who appeared more neutral or submissive. Although these results have been interpreted to demonstrate the futility of Dominance for ascending social hierarchies, two important aspects of the study design raise concerns about this inference.

First, these studies (inadvertently) examined the consequences of *failed* attempts at invoking fear. Despite their display of aggressive and threatening behaviors, confederates either posed no real threat to participants because they were present only via video-recording (e.g., Carli et al. 1995; Copeland et al. 1995; Driskell et al. 1993; Ridgeway 1987), or were actively resisted and challenged with reciprocal aggressive acts (e.g., Copeland et al. 1995; Ridgeway and Diekema 1989), indicating the absence of fear and thus an ineffective adoption of the Dominance strategy (Chase et al. 2002).

Second, all of these studies (e.g., Carli et al. 1995; Driskell et al. 1993; Ridgeway 1987; Ridgeway and Diekema 1989) assessed persuasion—a unique component of influence that entails private, internalized shifts in behaviors, ideas, values, or opinions (Wood 2000)—but not other forms of deference or influence. Importantly, our theory predicts *a priori* that, unlike Prestigious individuals whose influence is based on genuine persuasion and imitation, the influence of Dominant individuals is motivated by subordinate appeasement, and is thus a matter of compliance rather than actual persuasion (i.e., subordinates submit to the wishes of Dominants because they fear the consequences of nonsubmission, not because they come to genuinely adopt the Dominants' opinions; see Henrich and Gil-White 2001, p. 186). In our studies, which were designed to circumvent these limitations, we examined generalized influence more broadly (incorporating both compliance and persuasion), and found that it is heavily determined by the effective pursuit of Dominance (operationalized as group members' subjective reports of experienced fear, intimidation, and related perceptions).

As a final point on this matter, although research on organizational effectiveness has found that "pressure" tactics—which involve the use of demands, threat, and intimidation to influence others (and thus are akin to Dominance)—generally result in less successful and productive leadership, these findings address the effects of Dominance-based leadership on performance and other work outcomes, and should not be taken as direct evidence against or for the question of whether Dominance promotes social rank. The Dominance account holds that force and intimidation leads to submission and the conferral of influence and rank, but inherently makes no strong predictions about the quality of the behavior enacted out of coercion. It can be speculated, however, that because subordinates of Dominant leaders comply with their requests out of fear and harm avoidance, rather than genuine commitment, their influence will be met with resistance and the task behavior enacted by subordinates will generally be of poorer quality and performance. Consistent with this, a growing body of evidence appears to suggest that not only is Dominance-based leadership seen as an ineffective approach and frequently resisted by subordinates (e.g., Falbe and Yukl 1992; Kipnis and Schmidt 1988; Yukl and Tracey 1992), but it can also bear counterproductive effects on workplace performance and subordinate commitment (e.g., Falbe and Yukl 1992; Higgins et al. 2003; Yukl et al. 1996). Nevertheless, these findings address a distinct question, and do *not* directly indicate the basic efficacy of Dominance for acquiring rank and influence.

Dominance and Prestige are Distinct

If Dominance and Prestige indeed form the dual core foundations of human social hierarchies, they should not only concurrently promote social rank, but should also represent distinct pathways to high rank. The theoretical distinction between the two pathways—Dominance predicated upon fear and intimidation, and Prestige upon obtaining respect and admiration—leads to the prediction that the two avenues

should be underpinned by distinct psychological and behavioral patterns, which would allow their adopters to effectively intimidate (in the case of Dominance), or garner respect and admiration (in the case of Prestige). This prediction has received support from several recent lines of research, which have directly assessed and contrasted Dominance and Prestige by examining their associated behavioral patterns and fitness-related outcomes.

Distinct Personality and Emotional Profiles *First*, the pursuit of Dominance and Prestige are associated with different suites of interpersonal behaviors, personality traits, competencies, and emotional mechanisms. Consistent with evolutionary reasoning about the freely conferred versus coercive nature of their acquired rank, Prestigious individuals are perceived by group members as highly likeable, whereas Dominant individuals are not particularly well liked (Cheng et al. 2013e). Furthermore, the two pathways diverge in their associated interpersonal behaviors, based on correlations with traits that comprise the interpersonal circumplex framework (i.e. agency and communion; Bakan 1966; Wiggins 1979). Whereas Prestigious individuals are perceived by peers as highly agentic *and* highly communal, Dominants are perceived as highly agentic but low in communion (Cheng et al. 2013b). These findings suggest that, as a result of their contrasting communal orientations, Dominance and Prestige represent distinct ways of exerting agency. Further supporting this interpersonal distinction, individuals predisposed to pursue Dominance tend to rate themselves as aggressive, disagreeable, narcissistic, and manipulative, whereas those predisposed to pursue Prestige tend to rate themselves as conscientious, agreeable, and possessing high self-esteem (Buttermore 2006; Cheng et al. 2010). Prestigious individuals also demonstrate lower-levels of basal Testosterone (Johnson et al. 2007), an androgenic hormone linked to aggression (Giammanco et al. 2005).

In addition, Prestigious individuals demonstrate locally valued competencies and skills, but this is not the case for Dominants. For example, in the context of collegiate varsity teams, peer-rated Prestige is positively related to each teammate's level of academic achievement and athletic, social, intellectual, and advice-giving abilities (Cheng et al. 2010). Likewise, in the context of a small-scale Amazonian society, perceived prestige is positively related to hunting ability, skill in food production, generosity, number of allies, and nutritional status (Reyes-Garcia et al. 2008, 2009; von Rueden et al. 2008). Furthermore, other prosocial traits that effectively broadcast one's expertise and social attractiveness (i.e., his/her viability as a cultural model), such as altruism, cooperativeness, helpfulness, ethicality, concern for the public good, are positively related to Prestige, but negatively to Dominance (Cheng et al. 2010; Maner and Mead 2010, 2012).[1]

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[1] Although altruism and generosity increase perceived Prestige (Cheng et al. 2010; Willer 2009), in times of conflict unconditional prosociality—altruism directed toward out-groups as well as one's own in-group—can reduce perceived Prestige, as such behaviors undermine perceptions of group commitment and loyalty (Halevy et al. 2012). However, invoking unnecessary harm upon an out-group (without benefiting in-group members) increases perceived Dominance.

In contrast, Dominance is associated with a selfish disregard for the well-being of one's group. For example, when presented with a choice between personal benefits and collective success, Dominant leaders prioritize their own gains over those of others (Maner and Mead 2010, 2012). Furthermore, individuals who pursue Dominance tend to be fueled by the arrogant, conceit-based "hubristic" pride, whereas those who pursue Prestige are fueled by a more pro-social, competence-based "authentic" pride (Cheng et al. 2010).

Distinct Behavioral Patterns *Second*, we have found that Dominance and Prestige are associated with distinct characteristic verbal, nonverbal, and vocal behavioral patterns. During social interactions, Dominant individuals tend to engage in an intimidating and self-entitling verbal style that evokes fear and coercion (e.g., teasing others in a dominant way, forcefully pushing one's own ideas or opinions). In contrast, Prestigious individuals demonstrate a socially attractive verbal style that entails displaying warmth and self-deprecation (e.g., teasing others in a flattering way, seeking the group's approval on matters; Cheng et al. 2013b). Similarly, Dominant individuals tend to show spatially expansive postural displays (e.g., wide postures) in group situations, whereas Prestigious individuals display more subtle, nonthreatening movements that communicate confidence and competence, such as the pride display (e.g., small smile, head tilt up, chest expansion; Tracy and Robins 2004; Cheng et al. 2013b). Finally, Dominant individuals tend to deepen their vocal pitch in the initial minutes of an unscripted social interaction (Cheng et al. 2013d), which likely serves to increase their perceived threat potential and formidability (Puts et al. 2012). In contrast, Prestige is not associated with systematic changes in vocal pitch, consistent with the expectation that pitch deepening amplifies threat but does not influence perceived competence or respect.

Distinct Fitness-Related Outcomes *Third*, several other lines of work suggest that the pursuit of these two-rank pathways may entail distinct fitness-related consequences. For example, Prestigious villagers in Tsimane', a small-scale forager-farmer society, tend to more healthy than the average group member (on the basis of current nutritional status), whereas no effect was observed for Dominance (Reyes-Garcia et al. 2009). This distinction may result from the theoretical expectation that Dominance depends on frequent assertions of intimidation and threat which would entail greater biological costs (including increased stress) compared to Prestige—given that Prestigious individuals acquire access to resources and privileges through freely conferred deference. These biological costs might wash out the nutritional benefits that should accompany the greater flow of resources to those who effectively invoke Dominance.

Interestingly, both forms of rank appear to facilitate success in mate attraction and reproduction, albeit via different mechanisms. Although women generally indicate a preference for male targets described as Prestigious over those described as Dominant, highly Dominant men (relative to less Dominant men) are deemed no less—and in some contexts (such as in a competition) even more—attractive and desirable as short-term mates (Sadalla et al. 1987; Snyder et al. 2008). In addition, research among the Tsimane' found that Dominance and Prestige both predict great-

er reproductive success in men, though in different ways: Dominant and Prestigious men both have higher fertility (i.e., greater number of children), but Prestigious men additionally exhibit lower offspring mortality (von Rueden et al. 2011).

Overall, the theoretical distinction between Dominance and Prestige has been supported by a diverse range of findings, which, together, indicate that the two pathways to rank are underpinned by distinct suites of personality traits, emotional and neuroendocrine mechanisms, behavioral displays, and fitness-related outcomes.

The Dominance-Prestige Account Helps Integrate Prior Findings on Social Rank

The recognition that Dominance and Prestige form the core foundations of social rank in humans implies that these dynamics should jointly account for a vast range of previously observed rank-related phenomena. Specifically, we propose that the constellation of narrow lower-order traits and attributes that have been empirically linked to social rank can be best understood within the Dominance-Prestige framework. In the remainder of this chapter, we review this fairly large literature, and, for each finding, briefly explain how it can be understood as a Dominance- or Prestige-related process. In doing so, we devote greater attention to evidence supporting Dominance-based rank-attainment processes, given relatively greater controversy on this issue within the social psychological and management literatures (see Anderson and Kilduff 2009a).

Dominance Promotes Social Rank

Numerous lines of research indicate that hierarchical relationships in humans are, to a large extent, shaped by interactions involving threat and intimidation. Indeed, six separate lines of work have demonstrated associations between an actual or perceived ability to inflict harm and elevated social influence. Specifically, studies have linked increased rank to each of the following Dominance-linked behaviors and attributes: (a) coercion and aggression, (b) personality dominance, (c) physical size and strength, (d) facial structure, (e) vocal pitch, and (f) spatially expansive nonverbal displays.

Coercion and Aggression According to the Dominance-Prestige Account, direct or indirect displays of physical, psychological, or verbal aggression are the primary routes through which Dominant individuals attain influence. Consistent with this prediction, studies have found that acts of aggression, coercion, threats, derogation, debasement, and manipulation are frequently reported ways of "getting ahead" and influencing others (Buss et al. 1987; Howard et al. 1986; Kyl-Heku and Buss 1996). Conversely, the experimental induction of rank-attainment motives or assignment to a leadership role leads individuals to report increased aggressive

intentions (Griskevicius et al. 2009). Interestingly, other studies have found that the highest-level of abusive behavior is displayed by those who feel incompetent (i.e., who lack Prestige), suggesting that aggression may provide a means of attaining influence when the Prestige pathway is inaccessible (Fast and Chen 2009; Fast et al. 2012). Moreover, studies on hierarchical relationships suggest that the enactment of these aggressive behaviors are effective in promoting increased rank: Those who behave in a bullying, rude, demeaning, and anti-social manner in both experimental contexts (e.g., Van Kleef et al. 2011) and real-world relationships (e.g., romantic couples, fraternity members) tend to be the more highly ranked and influential members of the relationship (Keltner et al. 1998; Kipnis et al. 1976).

Developmental studies have also demonstrated that aggressive behaviors are effective in boosting influence in child and adolescent social groups. Preschoolers who display coercive and aggressive behaviors (e.g., taking away a toy, insulting, or physically aggressing against others) are more effective at acquiring control over a valued resource (e.g., a desired toy; Hawley 1999, 2002, 2003). These children are also the recipients of greater eye gaze and visual attention from other children—a conceptual indicator of social rank (Abramovitch 1976; Chance 1967; Fiske 1993; Hold 1976; La Freniere and Charlesworth 1983; Vaughn and Waters 1981). Furthermore, consistent with our account of aggression as instrumental for acquiring rank and influence (Pellegrini and Long 2002; Veenstra et al. 2007; Rodkin and Berger 2008), not only are adolescents who are most desirous of high rank more aggressive (Faris and Ennett 2012), but the display of aggression among adolescents tracks the availability of rank-improvement opportunities. Bullying and other aggressive acts increase in frequency during children's initial transition from primary to middle school, a period when the formation of new social groups provides ample opportunities to establish a new social hierarchy. Aggression subsequently desists after rank differences are established (Pellegrini and Bartini 2000), or when aggressors reach the pinnacle of the hierarchy and no opportunities for further rank gains are available (Faris and Felmlee 2011).

Personality Dominance Given that Dominance is predicated upon threat and aggression, personality traits such as dispositional dominance—defined as a tendency to behave in assertive and forceful ways (though not necessarily aggressively, as our concept of Dominance implies; Wiggins 1979)—are expected to promote threat-based relationships with others and consequently result in a high level of social influence for those who exhibit the trait.

Supporting this expectation, a substantial body of evidence indicates that personality dominance is associated with higher rank and leadership attainment. Meta-analyses of over 30 studies and 7,000 individuals demonstrate that trait dominance is one of the most robust predictors of leader emergence, outperforming a myriad of other traits including conscientiousness and intelligence (Judge et al. 2002; Lord et al. 1986). Moreover, individuals with dominant personalities acquire influence in groups *because* they are seen as intimidating, as well as competent (although they are not, in fact, particularly skilled) by other group members, suggesting that trait dominance promotes influence at least partially via perceptions of Dominance (Anderson and Kilduff 2009b; Cheng et al. 2013a).

Physical Formidability Paleoanthropological records suggest that aggressive conflicts were sufficiently widespread and substantial in human ancestral environments to exert a selection pressure (Manson and Wrangham 1991). The ubiquity of agonistic contests in this environment likely favored the emergence of a disposition to aggress and intimidate, alongside a decreased willingness to compete with physically more formidable individuals who engage in aggression and intimidation. As a result, physical attributes that either confer or track their carriers' fighting prowess and ability or willingness to inflict costs in violent contests—such as physical size (e.g., height) and strength, testosterone-linked morphological features such as wider facial structure and lower vocal pitch, and spatially expansive nonverbal displays—should be associated with increased rank and influence. Considerable evidence for associations along these lines exists; here, we review findings demonstrating that social rank is systematically linked to each of four classes of formidability-conveying attributes: physical size and strength, spatially expansive nonverbal displays, facial structure, and vocal pitch (see also Blaker and van Vugt, Chap. 6, this volume).

Physical Size and Strength Physical size and strength are the primary determinants of who prevails in aggressive competitions, across a diverse range of species including humans (Archer 1988). Larger and stronger individuals generally prevail in agonistic encounters, and smaller and weaker individuals are likely to sustain injuries or risk death during conflicts, so selection should not only favor aggression among the large and strong, but also a readiness to submit and defer to these individuals among those who are physically smaller and weaker. As a result, size and strength are expected to predict rank. A large body of work examining diverse human societies has supported the first part of this prediction: that larger and stronger individuals tend to be more aggressive (e.g., Archer and Thanzami 2007; Felson 1996; Gallup et al. 2007; Pellegrini et al. 2007; von Rueden et al. 2008; Sell et al. 2009; Tremblay 1998). Here, we focus on evidence supporting the second part of this prediction: that size and strength predict higher rank and influence.

    *B*oth men and women who are taller in stature consistently occupy a disproportionate number of leadership positions in organizations, and have a higher income (see Judge and Cable 2004). Moreover, the human mind is biased toward intuitively associating larger size with greater formidability, power and influence, and leadership capacity (Fessler et al. 2012; Marsh et al. 2009; Schubert et al. 2009; Stulp et al. 2013). Observers tend to overestimate the height of powerful others (Dannenmaier and Thumin 1964; Wilson 1968), and systematically overestimate the height of a target individual when feeling powerless, but underestimate this individual's height when feeling powerful (Yap et al. 2013). This perceptual bias emerges early in life and is seen even among 10-month-old infants, who expect larger agents to prevail in conflicts with smaller agents (Thomsen et al. 2011).

Facial Structure Facial width-to-height ratio (WHR)—a sexually dimorphic trait influenced by testosterone (e.g., Andersson 1994; Lefevre et al. 2013; Verdonck et al. 1999)—has been shown to systematically predict men's fighting ability, physical prowess, and rates of violence and aggression in both the lab and the real-world

(Carré and McCormick 2008; Carré et al. 2009, 2010; Christiansen and Winkler 1992). From the Dominance account, then, facial WHR should predict perceived formidability and resultant rank attainment. Supporting this prediction, men with greater facial WHR demonstrate an increased propensity to cheat and exploit others (Haselhuhn and Wong 2012; Stirrat and Perrett 2010), and are less likely to die from contact violence (Stirrat et al. 2012). Most importantly, wider-faced men are viewed as more dominant, forceful, and assertive by others (Alrajih and Ward in-press; Valentine et al. in-press), report a heightened sense of power and influence (Haselhuhn and Wong 2012), and achieve superior leadership performance, as evidenced by the financial earnings of CEO's firms (Wong et al. 2011).

Vocal Pitch Like facial WHR, lower vocal pitch is associated with higher levels of circulating testosterone (Dabbsand Mallinger 1999; Evans et al. 2008; Puts et al. 2012), and thus may serve as another cue to threat potential and aggression (Morton and Page 1992). Vocal pitch is thus also expected to promote perceptions of formidability and, as a result, increased success in rank competitions. Consistent with this expectation, listeners consistently rate deeper voices as conveying greater physical size, strength, masculinity, and dominance (e.g., Feinberg et al. 2005; Puts et al. 2006, 2007). Moreover, individuals who perceive themselves as physically stronger than a rival strategically (but likely unconsciously) lower their voices in competitive contexts, whereas those who view themselves as weaker tend to raise their pitch (Puts et al. 2006). Finally, in studies directly linking vocal pitch to success in rank attainment, lower pitched political candidates were found to receive more votes than higher-pitched candidates (Anderson and Klofstad 2012; Klofstad et al. 2012; Tigue et al. 2012), and to manage larger companies and have higher income (Mayew et al. 2013). In addition, participants instructed to deepen their pitch report a greater subjective sense of power (Stel et al. 2012), and individuals in a social interaction who spontaneously lower their pitch over the course of the interaction are perceived as higher in Dominance, and attain greater social influence as a result (Cheng et al., 2013d).

Spatially Expansive Nonverbal Displays Spatially expansive nonverbal postural displays increase one's apparent size, which should also convey formidability and thus promote high rank through the Dominance pathway (see also Hall et al. Chap. 15, this volume). Consistent with prediction, numerous studies have demonstrated that spatially expansive, open postures—such as pride displays and open arm and leg gestures—not only increase the perceived influence and rank of their displayers across cultures (Carney et al. 2005; Marsh et al. 2009; Shariff and Tracy 2009; Tracy and Matsumoto 2008), but also tend to be spontaneously adopted by powerful leaders or winners of physical fights (Tracy and Matsumoto 2008; for a review, see Hall et al. 2005). In contrast, losers of such battles, and followers, tend to adopt complementary constricting postures, which signal their deference and subordination (Tiedens and Fragale 2003; Weisfeld and Beresford 1982). Furthermore, in addition to promoting rank by increasing perceived formidability, expansive postures also activate rank-related cognitions and hormones, which in turn motivate rank-seeking behaviors. For example, adopting expanded postures

induces subjective feelings of power and control (Huang et al. 2011; Riskind and Gotay 1982; Tiedens and Fragale 2003) and associated increases in testosterone and decreases in cortisol (Carney et al. 2010)—a unique neuroendocrine profile that underpins dominance and rank-seeking behaviors (Mehta and Josephs 2010).

In summary, findings from these diverse programs of research converge to support a number of specific predictions that emerge from the Dominance account of social rank. Together, these findings underscore the formidability-enhancing aspect of certain attributes and traits that, by virtue of facilitating individuals' ability to wield dominance, are fundamentally linked to attaining and maintaining high rank. By recognizing the centrality of threat and coercion in human life, particularly in shaping patterns of influence and rank (alongside admiration and respect), the Dominance-Prestige Account thus allows us to explain and unite these previously disconnected lines of research.

Prestige Promotes Social Rank

Paralleling the findings reviewed above, a large body of evidence suggests that many of the narrower behaviors and psychological processes that underpin the attainment of respect and admiration (i.e., Prestige) also lead to increased rank and influence in humans. Here, we review these prior findings and focus on two major classes of traits and attributes that predict social influence via freely conferred deference: (a) the demonstration of locally valued skills and expertise and (b) altruism and generosity.

Locally Valued Skills and Expertise Imitating or learning from highly skilled individuals provides significant advantages over learning from less skilled others (Henrich and Gil-White 2001), making it adaptive for learners to effectively discriminate and mentally rank potential models according to their skills and expertise, and selectively determine whom to observe and imitate on that basis. Most importantly, learners should demonstrate a preference to imitate highly ranked models, and pay deference to these individuals in exchange for proximity and access to information. As a result, demonstrated expertise should be associated with higher social rank.

Supporting this prediction, a large body of research from across the social sciences has documented links between perceived competence in locally valued domains and rank attainment. Technical and task-relevant skills and expertise are among the most frequently nominated qualities important to leadership (Stogdill 1974), and their possessors generally emerge as most influential members of task-focused groups (Anderson and Kilduff 2009a; Bottger 1984; Laughlin et al. 1975; Littlepage et al. 1995; Miner 1984; Palmer 1962). Moreover, meta-analyses reveal that intelligence—a trait that presumably gives rise to diverse skills and abilities emphasized in modern societies—consistently predicts leadership emergence (Lord et al. 1986). In addition, individuals who view themselves as competent and capable prefer higher ranks and display greater rank-seeking behavior, whereas those who perceive themselves as less competent generally prefer lower ranks (Anderson et al. 2012b).

The ethnographic record also supplies numerous examples of the association between expertise and rank. Hunting skill, in particular, seems to be a primary means to both respect and societal influence in many foraging, horticultural, and pastoral societies (Gurven and von Rueden 2006; Kelly 1995; Wiessner 1996). Among the Kuna, an indigenous island-living population that hunts and plants crops on Panama's Caribbean coast, each man keeps a lifetime record of tapir kills. Men with the most tapir kills receive respect and exert substantial influence over others (Ventocilla et al. 1995). Among the Meriam, a Melanesian people of Torres Strait, Australia, success in turtle hunting—an extremely dangerous and financially costly activity that requires knowledge about turtle resting and feeding patterns—confers prestige, including from respected village elders who selectively support the opinions of younger skilled hunters in public meetings or private disputes (Smith and Bird 2000). Among the Western Apache, all men actively participate in hunting but only good hunters are accorded the highest prestige (Buskirk 1986). Beyond hunting, expertise in other valued domains—such as ethnomedicinal knowledge, storytelling, healing or supernatural knowledge, combat, farming and herding skills—are also associated with respect and influence in small-scale societies (see von Rueden, Chap. 9, this volume).

Importantly, Prestige is largely accorded on the basis of *perceived*, rather than *actual*, competence and expertise, which explains why Prestige and rank allocation tend to be strongly influenced by competence *cues*. The detection of true competence is often difficult, especially in circumstances that are noisy (i.e., models often fail before succeeding at difficult tasks), costly (i.e., careful observation over multiple occasions is needed), and offer limited information (i.e., it is not always obvious how competence should be judged; Minson et al. 2011). Learners therefore come to rely on superficial cues and symbols of competence and success, despite an often imperfect link between these cues and actual skill. For example, assessments of competence are often based on observable cues of confidence, such as degree of certainty expressed and amount of talking (Anderson and Kilduff 2009b; Littlepage et al. 1995), and nonverbal displays of pride (Steckler and Tracy, Chap. 10, this volume). Individuals incentivized to correctly answer trivia questions tend to imitate the answers of models displaying pride, regardless of these models' actual knowledge (Martens and Tracy 2013), likely due to the expression's function as a cross-cultural signal of high rank (Tracy et al. 2013). Similarly, hunter-gatherers gauge Prestige from signs of success such as wealth, ornamentation, and larger yams (Kaberry 1941; Malinowski 1922). Another well-documented cue is age, which indicates a lifetime of experience and accumulated skills and knowledge; the Samai, an indigenous Malaysian population, for example, seek out elders for their opinions and grant them disproportional influence over the society, despite their lack of power or authority to enforce decisions (Dentan 1979).

Research on children's learning preferences indicate a similar reliance on Prestige-related cues, suggesting that these biases are rapidly acquired in development, or may be innate, in the sense of reliably emerging across diverse environmental variations. Children as young as two years old prefer to learn from models who display confidence, compared to those who appear uncertain (Birch et al. 2009; Jaswal

and Malone 2007; Rakoczy et al. 2009; Sabbagh and Baldwin 2001). Similarly, 3- and 4-year-old children make inferences of Prestige on the basis of bystanders' visual attention to potential models (a Prestige cue), and subsequently choose to learn from the most apparently Prestigious models (Chudek et al. 2012).

The appeal of confidence as a marker of skill and knowledge is so potent that adults demonstrate a propensity to confer Prestige and deference to overconfident individuals, whose metacognitive assessment of their ability exceeds their actual performance; such individuals consistently attain higher rank than their skills merit (Anderson et al. 2012a). This bias, toward granting influence to group members who may not in fact deserve it, is similar to that described by status characteristics theory (Berger and Conner 1969; Driskell 1982; Driskell and Mullen 1990; Webster and Driskell 1978), which argues that rank differentiation in newly formed groups is partly influenced by members' personal characteristics—such as race, age, sex, and occupation. In this view, these characteristics have become stereotypically (if often incorrectly) associated with perceived task competence (see also North and Fiske, Chap. 12, this volume). These stereotypical expectations are imported into new and pre-existing group contexts, and shape expectations of relative skill and rank allocation (for a review, see Berger et al. 1980).

Altruism and Generosity The Prestige Account predicts that altruism and generosity, when coupled with competence in valued domains, should promote Prestige and social rank. Apart from marking excellence in the valued domain of morality, these pro-social behaviors—which typically benefit the group at a cost to the self—provide another means of conveying and widely broadcasting the generous individual's skills and ability to accrue valuable resources (i.e., Prestige). Large charitable donations, for example, serve as signals of the donor's wealth (Cheng and Tracy 2013). Such costly advertisements attract more learners and further elevate the Prestige of the displayer. In addition, social learners' tendency to imitate skilled individuals creates an extra incentive for the Prestigious to act prosocially. If a prestigious individual behaves prosocially (e.g., contributes to the group) others are likely to follow suit, thereby increasing the Prestigious individual's payoff. In contrast, if a prestigious individual defects, others are likely to defect, reducing any potential free-riding benefits for the Prestigious. In contrast, Dominants' behaviors are not copied, so any pro-social behaviors they display will not only mitigate their ability to evoke fear, but also fail to result in increased group-wide prosociality (Henrich 2005).

A large body of evidence from psychology, sociology, anthropology, and behavioral economics supports an association between altruism, generosity, and social rank. For example, groups tend to elect the most altruistic members as leaders (Hardy and van Vugt 2006; Milinski et al. 2002), and confer them with greater respect, admiration, as well as influence (Willer 2009). When rank-seeking motives are made salient, individuals express an increased desire for environmentally friendly yet costly products—but only when their purchase of these products is made publicly known to others, suggesting that certain altruistic acts are motivated by reputational concerns (Griskevicius et al. 2010; see Kafashan et al., Chap. 7, this volume). Indeed, the anthropological literature documents cross-cultural links between costly

displays of altruism and reputational gains. For example, in a Melanesian tribe the ability to share turtle meat—a highly prized commodity—signals the high quality (of the sharer), because turtle hunting is a time-consuming activity which requires substantial knowledge and skill (Smith and Bird 2000). Among the Semai, the most generous men are also the most popular and sought out for advice (Dentan 1979). In Lamalera, a sea-hunting village in Indonesia, those who hold official leadership positions tend to be the most excessive sharers (Nolin 2012; for more ethnographic accounts, see Hardy and van Vugt 2006).

In summary, the Prestige account—which was developed from theoretical models of cultural evolution and social learning, and in isolation from these empirical research efforts—provides an explanatory account for these prior findings demonstrating the importance of skill, talent, altruism, and generosity to rank attainment. The key insight that emerges from our empirically grounded theoretical approach is that humans allocate social rank on the basis of respect and admiration, in addition to force and coercion.

Concluding Remarks

Theoretical and empirical research programs from across the social sciences are converging to suggest that Dominance and Prestige form the dual foundations of human hierarchical relationships. Unlike prior psychological theories that specify proximate explanations for specific findings (e.g., competent individuals emerge as leaders because group members view them as best able to contribute to group functioning), the Dominance-Prestige Account provides a broader ultimate explanation for *all* of these findings, by proposing that human hierarchies are the product of our species' evolved tendency to submit to those who wield force and intimidation, and to follow and learn from those who garner respect and admiration. In this view, these two systems of rank allocation are underpinned by distinct psychological processes, behaviors, and neurochemistry which were selected for distinct evolutionary pressures.

More generally, we argue that this approach is not only a useful framework for organizing and understanding the extensive and rapidly emerging body of research on social rank dynamics, but also unifies these efforts into a single cumulative research program. As we have demonstrated, the Dominance-Prestige framework offers a unified explanation for why people who are coercive and aggressive, high in personality dominance, tall or strong, have wide faces and deep voices, and assume spatially expansive postures, tend to rise to the top of hierarchies; and why other highly-ranked individuals gain influence by instead demonstrating skills, expertise, and generosity. These diverse rank-related phenomena are best understood as phenotypic manifestations of one of two fundamental rank processes. Importantly, although not all predictions sketched above are unique to this account—in fact, other proximate explanations have been generated for each isolated finding—collectively they cannot be better explained by any competing model.

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Chapter 2
Prestige and the Ongoing Process of Culture Revision

Jerome H. Barkow

Prestige, Culture, and Cultural Transmission

Because these terms will be used throughout this chapter, it will be useful to begin with some of their complexities and simplifications.

What is "Prestige"?

Human beings *hierarchize*, defined as the tendency for social interaction to generate a social hierarchy. Hierarchies are usually conceptualized (depending on the language) either as composed of individuals who are "higher/lower than" or "in front of/behind" others. Thus, in the 1960s, in a study of self-esteem, I could show Hausa-speaking farmers in northern Nigeria a sheet of paper with a horizontal line on it and tell them that the Emir was at one end and a leper at the other. They immediately understood and, given a pencil, had no difficulty marking their own position (Barkow 1973). Hausa farmers, being human, hierarchize. In English, we have a rich vocabulary for describing relative standing (a term which itself implies in front of or behind) and status or rank. A commonly used term in discussion of relative standing is "prestige," defined by Barkow (1989, p. 203) as "respect and approbation accorded to one by others." Henrich and Gil-White (2001) add "freely conferred" to this definition, but the addition brings the difficult philosophical issue of "free will" to a discussion already sufficiently complex. Can respect and approbation be other than freely conferred? "Coerced prestige" is apparently an oxymoron. Or is it?

What do we make of the Stockholm syndrome, in which hostages come to respect, sympathize with, and even bond with their captors so that the fear and hatred initially "freely accorded" becomes freely accorded prestige? Human relationships

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are characterized by complexity and ambivalence. Respect and approval may mask or even include, for example, fear, sexual attraction, or envy. The initial emotion attached to a relationship is not necessarily permanent, and we may come to respect and regard as prestigious individuals whom we previously had feared or even despised, or vice versa. As celebrities and lovers know, we are a fickle species.[1] Be that as it may, "prestige" may only be one component in a shifting mix of sentiments involving multiple and likely complex psychological mechanisms, as exemplified by the Stockholm syndrome.

Hierarchical relationships in particular tend to include much ambivalence—one frequently both respects and fears one's superior, and often there is little enough of respect. For example, in situations in which hierarchy is formal—the boss in a work environment, for example—there is often a conflict between the amount of prestige attached to the position and the extent to which the individual occupying the position is capable of eliciting respect/prestige from the "underlings." In simple terms, one's boss may lack *charisma*, defined as the ability to nonverbally and paralinguistically win respect from others (Barkow 1989). Charismatic individuals are readily identifiable by their ability to (apparently) automatically draw positive attention from others. Promotion and political success, especially in societies in which status is more achieved than ascribed, may depend on personal charisma, but may also be due to accident of birth or doing well on civil service examinations. Thus, it is not uncommon to have little respect for one's formal superior: Formal rank is not prestige. (The US Army deliberately seeks to work around this problem. As Col. George E. Reed [2004, p. 68] writes, "The Army inculcates an attitude that one must respect the rank, even if one does not respect the person.")

Culture

"Culture" has any number of definitions and has even been contested within its originating discipline, anthropology (Aunger 2000). Here is what culture means, for present purposes: All species adapt to environment or go extinct. Over the long term, that adaptation is genetic—species evolve. Over the short term, however, members of a species may adapt to environment through behavioral changes some of which are learned from conspecifics, that is, they are products of social learning. In our own species, groups over time very often *accumulate* information of varying degrees of utility. When this learned information is considered as a socially

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[1] Barkow (1978) has argued that the Stockholm syndrome reflects the inappropriate triggering of mechanisms that evolved to help young children internalize norms crucial for survival. The triggering takes place because the extraordinary amount of power the kidnappers have over their captives is comparable to the power parents have over young children. The triggered mechanisms cause the victims to sympathize with, respect, and even (at times) admire their captors and to believe in their cause. Fear is replaced by or at least joined with admiration that may be construed as "freely conferred" because it can endure even after captivity ends. The problem here is that "freely conferred" is a simplistic folk concept that is incompatible with modern understanding of the complexities of human psychology.

transmitted information pool associated with a particular population or populations, we can speak of a *culture*. A culture's population(s) may be geographically localized or distributed over noncontiguous geographic areas. Any particular informational item may occur in multiple cultures, resulting in what is often substantial cross-cultural overlap. A *society* is an organized collectivity of people, a *culture* is an information pool whose information is lodged in the brains of the individuals who participate in it. Anglophone Canada and the USA are distinct societies whose cultural information pools largely (but certainly not entirely) overlap. A society may include populations with different cultures, provided these cultures share rules for social and political organization (otherwise the society will be politically unstable).

Culture Is Not Necessarily Adaptive

Our own species has a hypertrophied reliance on culture. This extreme reliance is surprising because unfiltered, unedited pools of cultural information accumulate maladaptive items while missing out on new, potentially adaptive ones (Barkow 1989; Barkow et al. 2001, 2012; Boyd and Richerson 1985; Enquist and Ghirlanda 2007; Richerson and Boyd 2004). Barkow (1989, pp. 296–297) presents a general discussion of maladaptive cultural traits that (with possibly excessive alliteration) situates the problem of cultural misinformation in the context of four processes: (1) *Environments alter.* Cultural information that once was adaptive may have outlived its usefulness. For example, efforts may continue to grow a particular crop even after climate change or a new plant disease has rendered the cultivar unsuitable for the area. Similarly, successful fishing techniques may lead to overfishing and the collapse of the fishery so that the cultural fishing knowledge becomes ineffective. (2) *Expenses emerge*. Moving from hunting–gathering to farming, for example, may result in a larger but much less varied food supply, causing nutritional deficiency diseases. Thus, our hunting–gathering ancestors probably never suffered from scurvy (vitamin C deficiency), unlike some cultivators. (3) *Errors accumulate*. Irrelevant or false information can enter the culture. Perhaps young people fail to learn a technique accurately or misunderstand a belief and then teach the error to the next generation, or perhaps the few individuals holding certain information die before others have learned it from them. Erroneous information may or may not be corrected: Generations of young people in North America were taught that tomatoes, which belong to the same family (Solanaceaea) as does Belladonna or "deadly nightshade," are poisonous. (4) *Elites appropriate*. High-status groups may encourage beliefs in their own interest. In medieval Christianity, the poor were taught that obedience to authority was a virtue and that they would be rewarded after death. Among the Kimam-Papuans of South Irian Jaya (described by Serpenti [1984]), young men were taught by their elders that sexual contact with women was ritually very dangerous, permitting the older men to monopolize the young women (Barkow 1989, pp. 361–362). Culture is not just an information pool automatically "transmitted" by "enculturation" or "socialization," as social scientists once imagined: it is an

arena for informational conflict, filled with error and missed ecological opportunities. It must constantly be revised, filtered, and edited. As will be shortly discussed, preferential attention to the prestigious can help edit out erroneous information when that prestige is based on real-world success; but it can also "transmit" irrelevant practices while affording an opportunity for the prestigious to spread cultural information that is in their own interest but not necessarily that of others.

The Need for Cultural Revision

Successful cultures are those that, at least in part, can rid themselves of maladaptive information. Barkow (1989) refers to this process as "culture revision" or "filtering," and more recently (Barkow et al. 2012, 2013) as "culture editing." Enquist and Ghirlanda (2007) speak of "adaptive filtering" for discarding maladaptive information while accepting the adaptive. Revision is always highly problematic and of limited accuracy. This is in part because the same mechanisms may be responsible both for cultural "transmission" and for editing. For example, it has been argued that, if one assumes that high-status (prestigious) people are doing at least some things right, preferentially attending to and learning from them may increase useful practices at the expense of less effective techniques (Barkow 1989, p. 312; Barkow et al. 2001, pp. 138–139; Boyd and Richerson 1985; Henrich and Gil-White 2001; Richerson and Boyd 2004), within a given cultural information pool. (Members of the gene-culture coevolution school of thought usually refer to this as "prestige bias," following the practice of Boyd and Richerson (1985)). As will be discussed shortly, preferential learning from the high-in-status may be as likely to introduce into a culture adaptively neutral/maladaptive traits as useful information. This point is readily apparent when we consider what, in contemporary Western society, young people are learning from our highly prestigious celebrity-entertainers and sports figures. (This topic, too, will be revisited at greater length below.)

The editing of cultural information is a highly uncertain process. Ethnographic records exaggerate the effectiveness of cultural knowledge because ethnographies can be written only for societies that are at least somewhat successful, that is, societies that still exist, or did until very recently: As with animal species, the vast majority of earlier cultures and societies are now extinct, with the failure of cultural editing probably having contributed, in many cases, to that extinction. But the ethnographic record suggests that even successful cultures are studded with misinformation. It could not be otherwise. For example, how does a parent distinguish a child's ill health caused by a heavy parasite load from ill health due to poor nutritional practices (Barkow et al. 2001)? Informational domains in which corrective feedback is lacking tend to be populated with ineffective and even maladaptive beliefs and practices (e.g., the formerly widespread practice of denying the infant the colostrum [Barkow and Hallett 1989]). The editing and filtering of cultural information is as hit-or-miss a process as it is essential to human survival and reproduction. As with other evolutionary processes, there is no requirement for

perfection in cultural editing, only that it be more effective than the cultural editing occurring in rival societies.

Michael Chance, Attention, and Fear and Non-Fear-Based Social Hierarchies

Cultural transmission and revision begin and end with social learning, and social learning begins with attention. The primatologist/ethologist Michael Chance and his collaborators (Chance 1967, 1988; Chance and Jolly 1970; Chance and Larsen 1976) argued that primate social hierarchy is not a simple matter of dominance (fear-based) relationships but, rather, is a structure of social attention: the higher ranking receive preferential attention from the lower in status. The nature of the social hierarchy depended on the type of attention involved. For Chance, primate "hedonic" attention contrasted with "agonistic" or threat/danger attention and were associated with hedonic and agonistic hierarchies, respectively. Chimpanzees tended to have hedonic attention, he (and some of his collaborators) argued, while the social hierarchies of the baboon-macaque group were agonistic. Chance, who for many years studied macaque monkeys at his laboratory at the University of Birmingham (UK), of course understood that agonistic elements were common in hedonic hierarchies and hedonic elements in agonism-based rank systems. For example, he described chimpanzee subordinates fleeing from a threatening higher-ranked individual only to return to the same individual for a reassuring hug. However, Chance believed that, in any one species, either hedonic or agonistic relationships would be predominant, and that the different kinds of relationship and attention led to different types of learning. Agonistic relationships were associated with fear-based learning, learning about how to avoid punishment. Hedonic relationships were associated with unobstructed channels of communication in which a very broad range of information could be conveyed. In our own species, both hedonic and agonistic attention and social hierarchy could exist.

It is not clear exactly what "hedonic" means, other than signaling the occurrence of hugs, embraces, and mutual grooming; "agonistic," however, clearly refers to displays of threat on the part of one individual and a fearful response on the part of the other. It is now well-established that fear learning is quite different, even at a neurological level, from other than kinds of learning (e.g., Öhman and Mineka 2001; Sigurdsson et al. 2007); neuroscientists even speak of a "fear module" associated with the amygdala that operates with fear-associated learning. It is probably best to think of Chance's dichotomy in terms of fear-based attention versus non-fear-based attention. Current discussions of this fear versus non-fear dichotomy in systems of social rank tend to cite not Chance but the overlapping ideas of Henrich and Gil-White (2001).[2] Like Chance, they argue for two different kinds of hierarchi-

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[2] While these authors themselves do not cite Chance directly they do cite Barkow (1975), who summarizes Chance's ideas, and they do appear—in my opinion—to have been influenced by his thinking.

cal relationships, their labels being "prestige" and "dominance." The latter appears to be similar to Chance's "agonistic" mode. Henrich and Gil-White argue that high rank (i.e., priority of access to resources, influence, etc.) is a direct result of greater skill or prestige, and it is by virtue of using better techniques that these individuals have gained their rank.

Henrich and Gil-White believe that prestige-linked learning is the product of selection for cultural transmission (a topic not explicitly discussed by Chance, who does, however, write extensively about social learning). Their position overlaps with that of Barkow (1989, p. 312, Barkow et al. 2001, pp. 138–139), who argues that preferential attention to the prestigious tends to revise culture by editing out ineffective knowledge in favor of practices that work. Henrich and Gil-White (2001) and Barkow (Barkow 1989; Barkow et al. 2001) are certainly at least in part correct—Chance's brilliant insight into primate preferential attention to and learning from the high-in-status helps to explain how we could have evolved so strong a dependence on culture without its advantages being wiped out by the accumulation of maladaptive "information." There is now experimental research establishing that we do learn preferentially from the high-in-status and/or successful (Atkisson et al. 2012) and that, as Chance argued, we also attend to them preferentially (Cheng et al. 2013). We are also more likely to imitate those who nonverbally communicate "pride" than from those who do not (Martens and Tracy 2012). Presumably, preferential attention to the high-in-status, a part of primate social hierarchy, served as an exaptation[3] for culture-filtering social learning (though we have no way of knowing if the chimpanzee and humans share preferential learning from the high in rank and success as a result of common ancestry [parallel evolution] or whether they independently evolved the trait [convergent evolution]).

Prestige, Sexual Selection, and Cooperation

Human societies have numerous systems of non-agonistic, prestige-related rank, all based on different sets of symbolic criteria. A symbol is something that stands for something else, and, in this case, the "something else" is a criterion for assessing relative standing. Cultures provide multiple sets of such symbolic criteria; participants in a particular culture may evaluate themselves and others in terms of, for example, various kinds of skills in production and entertainment, membership in a kin or other type of hereditary network, speaking ability, sexual attractiveness, the number of their healthy children and grandchildren, or the degree of prestige accorded to those children and grandchildren[4]. Individuals tend to weigh competing criteria sets in the service of their own self-esteem: The avid footballer "knows" that that

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[3] "Exaptation" refers to the fact that the selection pressures which originated a trait may subsequently be replaced by others, so that the trait changes in form and function.

[4] For example, among some groups the stereotype exists of the proud parent who speaks not of "my son/daughter" but of "my son/daughter the doctor," the profession of physician being considered highly prestigious.

sport outranks basketball, the owner of a Maserati and the self-consciously "green" bicycle owner may have very different ideas about their relative standing. Some sets of criteria may be age and gender specific, so that, pre-teens and teenagers may compete in terms of quite different criteria, and, depending on the culture, success among women may be evaluated in ways distinct from that of success among men.

Many sets of prestige evaluation criteria can be placed along a situational versus overweaning axis. At the overweaning extreme are criteria that imply that prestige is inherent in the individual and always relevant regardless of circumstances, at the situational end are prestige criteria that apply only under very specific circumstances. For example, prestige as a cook is mostly situational, as when my guests thank me for the excellent meal I have served them. In contrast, criteria for the rank of monarch have to do with ancestry; being the monarch is always overweaning and never situational. Prestige as a physician is somewhere between these two, the doctor ranks high in the confines of the hospital but not in the police station when accused of a serious crime. In contrast to the multitude of ways in which members of our own species can attract prestige, nonhuman primate societies appear to have only one system of rank, producing a single social hierarchy (though it would not be surprising if primatologists found some degree of nonagonistic situational rank, particularly among the anthropoid apes). Presumably, our distant ancestors, too, had essentially a single hierarchy. How then did we move from primate social hierarchy to human multiple systems of symbolic rank?

Barkow (1989, p. 187) answers this question in terms of sexual selection: "Selection would have favored females who preferred not just males with high agonistic rank but [also] males with high investment ability. It would also have favored males who, finding themselves unsuccessful in competing in agonistic dominance, instead emphasized the procurement of resources. An alternative path to reproductive success was now opened for males, one emphasizing not agonistic competition but competition for resources and in the tool skills associated with resource competition… ." To this, it should be added that selection equally would have favored males who chose to mate with females who exhibited greater skill in resource acquisition and tool skills. Females would, therefore, have been selected to compete in the ability to procure resources (and, possibly, in mothering skills). Thus, for both females and males, there would have been competition not just for agonistic rank but for rank (and therefore, reputation) in terms of skills and abilities: symbolic rank, prestige. The capacity for culture no doubt was the evolutionary product of multiple sets of selection pressures that varied over time, and no single process should ever be considered in isolation; in the context of these multiple selection pressures, however, "primate agonistic dominance would have gradually broadened into the modern multiple-criteria sets of human prestige" (Barkow 1989, p. 187).

Once hominins began to compete in areas other than agonistic dominance, the way was opened to competition in numerous other domains. Geoffrey Miller (Miller 1998, 2000a, b) argues that much of human psychology—a sense of humor, art, music, verbal skill, indeed, almost any skill domain—are products of sexual selection. They are all reliable indicators of "good genes," of genetic fitness, argues Miller. Thus, we find, in human societies, what appears to be an incredible number of cul-

turally varying ways of competing, unified because all involve competition with a standard of excellence. Where Barkow (1989) focuses on sexual selection for skills in resource acquisition, Miller's focus is much broader and emphasizes the self-accelerating, positive feedback process of runaway sexual selection. Combining the two approaches presents a reasonable account of how it is that human societies are today typified by multiple sets of criteria for the allocation of prestige, each set defining an arena for competition and an identity. (To get prestige as a chef I must compete with other chefs in terms of prestige criteria associated with cooking, to get prestige as a philanthropist I must compete with other philanthropists in terms of a set of criteria for prestige allocation specific to philanthropists, and so forth.)

Without symbolic prestige, it is difficult to see how complex societies could have developed. Symbolic prestige permits individuals to be relatively comfortable with their lot in life because their arena of competition is sharply curtailed: As a farmer, I need not directly compete for status with the blacksmith or the aristocrat, just with other farmers. While prestige doubtless plays a role in filtering maladaptive information from culture, it is the *sine qua non* of complex society. Symbolic prestige curtails status competition and thus enables social organization above the level of the troop of nonhuman primates. Only with the relative encapsulation of social strata made possible by symbolic prestige could complex societies have evolved. However, symbolic prestige potentially leads to more social competition for relative standing *within* each stratum of society, even if it entails less competition *among* strata. It is the latter that is more likely to produce social disintegration, after all. As will shortly be argued, symbolic prestige also promotes human cooperation.

No matter how complex the society and no matter how many the different sets of criteria for prestige allocation available, agonism lurks in our social hierarchies (Barkow et al. 2012). Challenging another's prestige can spark anger and an impulse towards violence (suppressed, one hopes). Control over resources and the capacity for physical violence seem to be the bottom line of human social hierarchy. When societies disintegrate, or when colonial conquest destroys existing sets of prestige criteria, these remain. The news media may refer to the new leaders as "warlords" or "gang leaders," but it is these figures, who control resources and violence, who become the respected, the prestigious, the people from whom children learn. The Stockholm syndrome, discussed previously, may reflect a primordial link between power/resource control on the one hand and respect and prestige on the other. From an evolutionary perspective, of course, none of this is surprising: We did not evolve in the psychologist's laboratory where clever experimental design may permit the separation of the agonistic vs. non-agonistic aspects of our relationship to another, we evolved in situations in which the neurophysiological bases of our relationship behavior were always in flux, and agonism was and is our last resort when all other efforts for us to maintain our relative standing fail. Experimental findings in psychology are of immense importance but need to be understood in the context both of ordinary life and of human evolution.

Cooperation

Non-agonistic ("hedonic," "prestige") attention facilitates cooperation. Larsen (1976, p. 263) explains how hedonic attention permits individuals to spend more time learning from and cooperating with one another: "Increased reliance on a hedonic mode of interaction enhances cooperative behavior and social learning as actors are able to move easily in close contact and jointly explore and manipulate the environment. The overall survival value of a net increase in the time spent on nonsocial attention paying is fairly obvious as considerably more time can be spent on initiating environmental manipulation." The time saved can also be spent in cooperative resource-accrual endeavors such as gathering, hunting, and farming, as well as in competing with rival groups or coalitions.

The development of multiple sets of symbolic criteria for the allocation of prestige further promotes cooperation because it mutes competition. This is because the evolution of diverse prestige allocation criteria permitted individuals to believe themselves to be as high or higher in prestige than many of those around them. We see this often among friends, in our own society: I recognize that you make more money than I do but I know that I am superior to you because of my many volunteer activities. You may have more expertise in cuisine than I do, but my body is in better physical shape. You may beat me in tennis but I am better-looking, or have the more desirable spouse, or whatever. If there is no actual sphere in which I am your superior then I can always resort to believing that I am *morally* superior to you (Barkow 1989). So long as we do not speak of these things we may be friends or at least able to cooperate with one another. As early hominins became increasingly able to evaluate relative standing symbolically, cooperation in hunting, gathering, tool-making and sharing, and defense/offense against other bands would have increased. Thus, prestige likely played a role not just in filtering mistaken information from culture but also in promoting cooperation among individuals.

Prestige and Strategic Cultural Learning

If there are multiple criteria for prestige allocation in our society, and we learn preferentially from the prestigious, how do we choose which prestigious person we should attend to and learn from? From an evolutionary perspective, we would expect that the receipt and filtering of cultural information would be strategic and thus dependent on the current status of the "recipient," that is, our age, gender, social class, group membership, relative rank within a group, and likely other factors. If I am a child, then the most prestigious older child in my group is likely to provide the most immediately useful cultural information for me. If I am being trained as a physician, then I will pay preferential attention to practicing physicians[5]. If I am a

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[5] Professors with doctorates but not medical degrees who teach in medical schools have been known to complain that the students pay little attention to them, despite their often considerable

heterosexual around puberty, then theory predicts that I pay preferential attention not just to those prestigious in general but to those who appear to be highly successful in intrasexual competition: The actors depicted in films and in the media as having full and successful romantic lives will be the prestigious figures to whose activities I pay close attention.

We choose our competitive arenas strategically because not all spheres of prestige are equal: they themselves are often ranked. In general, the more complex and populous the society, the more spheres of symbolic rank exist. In which arena should I choose to seek prestige and respect? Barkow (1989) argues that the adolescent's problem in our own society is not precisely to find one's "identity," as Erikson (1950) believed, but to choose the arena for competition in which one will do best—it is the choice of arena that sets the identity. Should one be a footballer or a good student, should one seek popularity or a reputation for wildness and daring? The relative standing of different arenas can often be questioned: Who is higher, a chess expert or someone who rebuilds their car from the ground up? Is the professor more prestigious than the banker or the real estate developer, the construction worker more respected than the soldier? Is wealth the ultimate form of prestige or does how one obtains it and what one does with it determine its prestige value? We tend to see the arenas in which we ourselves do well in competition as being of greater value or higher rank than the arenas in which we strategically do not compete. If I was always picked last for the ball team then I will not compete for prestige as an athlete and will tend to withhold respect for athletes as a group. Familiarity also plays a role in my choice of domain of competition: If I have family members in the legal field but none in medicine then I may choose law school over medical school. If no one I know has a military career then I am less likely than the children of military families to seek admission to West Point.

Because we each participate in multiple prestige arenas, we may strategize in our daily interactions. For example, when I meet a stranger, I may mention the garden I am proud of; on finding that the other has a far larger and more beautiful garden than my own, I may move the competition from skill and knowledge of gardening to golf or to cuisine. We remain primates, however: lurking beneath all competition in symbolic spheres is agonism (Barkow 1975; Barkow et al. 2012). If I lose in symbolic competition with you, I may grow angry and physically assault you, or at least want to. In organized sports (soccer, ice hockey, and American football, for example), the symbolic competition of a game with clear rules often breaks down, resulting in actual physical violence. Cultures clearly differ in the extent to which recourse to violence, or at least threat, is compatible with respect and prestige. Honor cultures, as described by Nisbett and Cohen (1996), appear to link rank, prestige, and capacity for effective violence, as do the Yąnomamö (Chagnon 1977). Fessler (2006) shows how the "male flash of anger" can be used strategically, in social interaction. In real life, seeking prestige as opposed to seeking to dominate

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eminence as researchers; professors who are practicing physicians seem to find it easier to attract the attention of the students.

through fear are often tactics with the same strategic goal, that of achieving high rank in the hierarchy.

Both mathematical models and experimental design necessarily and legitimately simplify complex social reality. Thus, hierarchical relationships based on fear (agonism, dominance) may be treated by researchers as separate and distinct from those based on respect and affection (hedonic or prestige-related). But it is important not to confuse how social learning and cultural transmission occur in the real world with models and experiments—these supplement but can never replace naturalistic observation and ethnographic fieldwork. In the real world, the world in which we evolved, ambivalence rules, and "hedonic" and "agonistic" attention are likely to be intertwined, perhaps along with envy or even sexual attraction.

Begged Questions in Cultural Learning

Even to argue that "we choose our competitive areas strategically" begs a host of questions. To begin with a major theoretical issue, all social learning starts with social attention, and any attentional mechanism could, in principle, have served as an exaptation for some aspect of the social learning/filtering that is involved in culture "transmission." Prestige is not necessarily the only filter there is for filtering the transmission of cultural information, leading to the following questions:

1. Are there non-prestige related mechanisms for some kinds of cultural learning which play a role in cultural transmission/editing? For example, a mother–infant pair strongly attract our attention. Is child-care information learned through attention to mother–infant pairs regardless of the prestige of the mother and infant? Similarly, danger is an attention attractor: Is danger-related learning independent of the prestige (or other index of relative standing) of the individual(s) from whom we learn about the danger? Finally, we tend to pay close attention to our rivals: does rivalry lead to cultural learning and therefore information transmission?

2. Alternatively, is prestige/relative standing the primary gateway for cultural learning/editing? In that case, we would expect to find conceptually simple evolved mechanisms—switches—that merely determine to which individuals in which situations, given our current age, our gender, and our self-evaluation, we accord prestige and therefore from whom we learn.

3. Are there evolved algorithms that cause us to act as if we were weighing our past history of success in various domains against the local relative standing of each domain vis-à-vis one another? For example, does the prestige of medicine outweigh the difficulty I have in studying it, as opposed to the ease with which I can learn the lower-ranked field of automobile mechanics? (This is what Barkow [1989] refers to as the size-of-frog versus size-of-puddle problem.)

4. Do high-ranked individuals abuse their prestige power by deliberately putting self-serving information into the cultural information pool? This possibility was previously discussed under the "Culture is not necessarily adaptive" subhead-

ing of "Elites appropriate." Certainly, cultural information often seems to favor some groups at the expense of others, e.g., the Hindu caste system, the privileges of the aged in gerontocracies, or the genital mutilation of women and the various other efforts to control female sexuality that are common, cross-culturally: Is it possible to experimentally investigate self-serving cultural transmission on the part of the prestigious?

5. Do the criteria in terms of which we accord prestige to others change in a predictable manner, over the life course?

6. Does the apparent promise of high-value sexual partners affect our choice of domain of competition (and therefore strongly affect cultural learning)? The terrorist recruiters who created websites guaranteeing 72 virgins to male "martyrs" (that is, suicide bombers) obviously thought it did. Sexuality and current mating preferences may strongly influence the behavior and cultural learning of younger humans. This influence may be the product of specialized evolved mechanisms, as suggested in begged question #1, above; or it may be that sexuality influences our choices of whom we find prestigious, in accordance with begged question #2.

7. Did human intelligence in part evolve as a way to filter the filter, that is, to permit us to consciously decide which aspects of a high-status person's behavior are worth acquiring, and which aspects should be ignored?[6] That is, does intelligence mitigate our tendency to learn preferentially from the prestigious?

All of these questions merit further discussion but let us focus on the last: Prestige may filter cultural information but the filter needs a filter, otherwise we would be acquiring more useless than useful information from the high ranking. How do we determine which traits associated with a high-status figure are relevant to attaining that status, and which are irrelevant? That is, how do we isolate adaptive signal from useless (or even maladaptive) noise? One possibility, as was suggested, is that human intelligence in part evolved as a way to do this required secondary filtering. Intelligence may permit us to decide consciously which aspects of a high-status person's behavior to learn about and perhaps acquire ourselves, and which aspects are best ignored. If so, then intelligence and preferential learning from the high-in-status must have evolved in tandem. Support for this hypothesis would require experimental evidence establishing that we are highly discriminating in what we learn from a high-status person, limiting the information acquired or behavioral traits adopted to those likely to enhance our own relative standing. (The marketing industry's use of celebrity spokespeople suggests they are assuming that this hypothesis would not be supported empirically.)

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[6] If much of cultural capacity and, indeed, human psychology itself, was indeed produced by sexual selection, then it was our biological "Big Bang;" a constant concern with sex is apparently our species' equivalent of Cosmic Microwave Background Radiation.

Subverting Cultural Transmission by Debasing Local Prestige

Our ancestors lived in small bands of hunter–gatherers; even with the coming of agriculture, 10,000–12,000 years ago, until very recently most of us still lived in small communities. In such settings, prestige as a filter for the transmission of cultural information works well. There is little ambiguity, in small communities, about who has which skills, about which people can keep their babies alive and healthy and which cannot, about who makes the best tools or brings back or grows the most food, about who is the best tracker and who can make people laugh or tell stories and who can settle disputes. Cultural transmission was largely face-to-face, for almost all of human history, and knowledge of relative standing and skill-level was public and largely accurate: Much of cultural learning was directly relevant to everyday experience.

Of course, human communities have rarely been totally isolated. In the past, the occasional traveler, trader, raider, or refugee would have potentially brought new knowledge. Those who gave them respect or fear might learn from them.[7] Local dignitaries, however, could still be respected, permitting the transmission of relevant, local/indigenous knowledge to continue.

In my own field experience (Barkow 1982), upon arriving in the town of Duduguru (near Lafia, in Nigeria's Middle Belt), during the 1970s, my host took me on a tour. He pointed out a woman to me and recited how many children she had had (18) and proudly told me that almost all of them were alive and well. He took me to see a young man playing with his toddler and spoke in awe of the number of hills for yam-planting this man had heaped in a single day. These were local successes, local highly respected individuals. In a society experiencing only slow to moderate change, it would have been adaptive indeed to learn from these people.

But Duduguru and its Migili people were experiencing change at a furious rate. Many of the young men had joined the Nigerian Army and had been shocked to learn that their revered elders, who followed Migili traditional, geography-bound religion (I was shown precisely where the gods live), were held in contempt by the dominant, non-Migili, Moslem population. Shortly before I began fieldwork, many of the young men had withdrawn from the traditional religion and the traditional age-grade social organization and even physically assaulted the elders, resulting in immediate and dramatic change. The religious, political, and economic organization of their society, a gerontocracy, collapsed.

Modern media, first the movies and now the internet, arguably may be turning the whole planet into Duduguru by breaking the ancient chain of cultural transmission. This is because the media present to us figures who apparently have more prestige than do our locally respected characters. They appear to be physically beautiful, in wonderful health, wealthy and powerful, feared or desired by other

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[7] Respect or prestige should not be confused with affection or even the absence of enmity. The USA has been hated in much of the world by people who nevertheless readily adopt its entertainers and some of its cultural practices. American-style rap music and fast food, for example, are popular in many places in which America itself is not.

high-status people. Our local politician or police officer, hockey coach or business person, shrinks in standing when compared to the Hollywood or Bollywood star or the gold medal Olympic athlete or the bling-covered rapper with an entourage of attractive people. All over the world, children are learning preferentially not from members of their own community but from media figures whom they perceive as prestigious. Thus, they want to have their own bands, or to be rappers, or to learn kung fu, or to join political and religious movements. Local prestige is debased, and with it, local knowledge and the local path to prestige. When the baker is respected, or the man who can heap 300 hills of earth for yams in a day, or the careful mother who watches over her children and follows modern nutritional and medical practices, those according them prestige can learn readily what to do to achieve comparable success. Local figures provide locally relevant, useful, accessible knowledge. Films about superheroes do not. When the superwealthy are constantly in the news, the locally respected person of moderate means may cease to be a prestigious figure whom young people attend to and learn from. Even worse, proselytizing websites designed to recruit may glorify alien but apparently prestigious figures, deliberately detaching a young person from family and friends and teaching to kill. The world over, many parents are wondering who their children are.

Of course, this jeremiad is overblown. We know surprisingly little about the mechanisms of cultural transmission per se but we do know that they can differ from one knowledge domain to another (e.g., language is not learned the way in which we learn to cook or to do coiled basketry), and they likely change throughout the life course. At different ages, we presumably find different people with different attributes prestigious. Moreover, the change brought by prestigious media figures is not necessarily a bad thing. Larkin (1997, 2008), for example, discusses how Hausa women of the Nigerian city of Kano have, after a diet of Bollywood films, been demanding more romance from their partners! It may be, however, that prestige-based social learning is most salient during adolescence, when choice of identity and prestige criteria—that is, career—appears to be made. It is this group that may be most vulnerable to diversion from the transmission of local knowledge. (These hypotheses are presented here as suggestions for future research.)

Conclusions

Our tendency to hierarchize is vastly important for an understanding of human psychology and society. For the social scientist, social hierarchy can lead to social stratification, the castes and classes that form the scaffolding of large-scale society. Each social class then seeks to keep itself distinct from the classes beneath it, which is why the wealthy happily pay enormous prices for everyday objects—not in spite of their price but because of their price (Saad 2007)—and why professors who cannot compete on the basis of wealth may do so, for example, on the basis of knowledge of ethnic cuisine (Bourdieu 1984). For the marketing expert, understanding the search for prestige and distinction is the royal road to sales. For the psychologist, social hierarchy—rank—is intimately related to self-esteem, and

prestige can certainly boost self-esteem. We have seen, in this chapter, how prestige enables cooperation and, importantly, how it is a significant aspect of the process of cultural editing or filtering.

"Prestige" is of course an ordinary English/French term and it is always risky to seek to remake such a word into a precise, scientific concept (as does Barkow 1975, 1989). Prestige means according respect or approval but it is confusing to apply it to someone as a whole because we may approve of some of what another does but despise other aspects of their behavior: Approval of everything another does is not giving them prestige but adulation, a rather different phenomenon. For research purposes, it may be better to begin by contrasting agonistic with nonagonistic relative standing, and then to analyze the components of the latter; prestige is likely to be a large but probably not the sole element in this category; the current rather global approach to "prestige" may be leading us to pay less attention to other nonagonistic factors that may influence hierarchizing (such as age, gender, physical attractiveness, and verbal facility). We may also find that we need to speak of "domain-specific" respect or prestige, with the term referring not to dedicated evolved mechanisms but to specific spheres of information or skills. Within established groups, there may also be situation-specific social rank (the most respected person when we go hunting may trade places with another when we are talking about investment opportunities). True, contrasting "prestige" with "dominance" has thus far worked reasonably well in the laboratory (e.g., Cheng et al. 2013) and even in field settings (e.g., von Rueden et al. 2011; Reyes-García et al. 2009). We must never forget, however, that both at the individual and collective level, they are typically intermingled. Human relationships are componential, after all, and may include (for example) fear, affection, respect, envy, sexual attraction, and disgust, the dominant sentiment possibly shifting from moment to moment; with each shift a corresponding change in the amount of attention we are paying to a particular individual or to their current activities may take place.

Perhaps even more interesting than how we attend to and learn preferentially from the high-ranking is the consequences for the low: They become invisible. Even Chance, who first understood that we pay preferential attention to the high-in-status, failed to theorize about inattention to the low-in-status. It is embarrassing to realize just how much we know about high-ranking media celebrities, for example, even celebrities whom we profess to despise: We simply cannot take our attention away from them, while it takes a determined effort of will to pay attention to the poor, the lame, the homeless, or the guy who asks us for "spare change" (Barkow et al. 2012). This behavior looks like a lack of compassion but to some extent may simply be a product of evolved inattention. Presumably, our ancestors became our ancestors in part because they paid attention to the individuals who were potentially good mates, reciprocity partners, sources of resources or useful knowledge; or were dangerous. Paying attention to those who fit in none of these categories did not reli-

ably enhance fitness.[8] Today it continues to take an effort of will, moral exhortation, or religious or ideological commitment to attend to the low in relative standing.

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[8] One could argue that, in terms of evolutionary biology's costly signaling theory, attention and aid to those utterly lacking in social rank would be akin to the peacock's plumage, a signal that one's genetic endowment was so superior that one had resources to burn! However, such an argument should not be used to reduce the practice of good works to nothing but costly signaling!

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Chapter 3
Do Status Hierarchies Benefit Groups?
A Bounded Functionalist Account of Status

Cameron Anderson and Robb Willer

Status hierarchies are said to emerge in all human social groups, in that some individuals inevitably develop more respect, prominence, and influence than others (Bernstein 1981; Davis and Moore 1945; Eibl-Eibesfeldt 1989; Hogan 1983; Leavitt 2005; Magee and Galinsky 2008; Mazur 1973; Parsons 1940; Schjelderup-Ebbe 1935; Tannenbaum et al. 1974; Van Vugt et al. 2008). But while status inequality may be ubiquitous in groups, this does not necessarily mean that this inequality is beneficial to them. Here we address the question of whether or not groups benefit from the presence of status hierarchies.

Broadly speaking, there exist two prevailing views of the effects of status hierarchies on group outcomes. *Functionalist accounts* view status hierarchies as vital organizing structures of social order. Scholars associated with this view note important ways in which status hierarchies support groups, for example, reducing intragroup conflict over influence and control (Barnard 1938) and motivating individual sacrifice for the collective good (Willer 2009). Much evidence supports this functionalist account, for example, by demonstrating that clear hierarchies are associated with more peaceful and effective interactions among group members (Bendersky and Hays 2012) and that the lure of higher status can promote group-oriented behavior (Griskevicius et al. 2010).

In sharp contrast, *critical accounts* of status hierarchies see them as divisive sources of inequality at the microlevel. Scholars of this view often note that such hierarchies allocate important social rewards like respect and influence not on the basis of individual competence, but instead based on characteristics assigned value arbitrarily by the larger culture (e.g., race, gender, social class; Berger et al. 1972). Consistent with this view, much empirical evidence demonstrates that status hierarchies can wreak severe damage on groups, for example, impairing collective performance (Anderson

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and Brown 2010), lowering morale (Smith and Tannenbaum 1963), and undermining group members' satisfaction and well-being (Pfeffer and Langton 1993). How can these findings be reconciled with those supporting functionalist accounts?

We see merit in both perspectives and here seek an integrated view that acknowledges the evidence and logic supporting each perspective.[1] Specifically, we believe an appropriate way to understand the social impact of status hierarchies is through a *bounded functionalist* perspective. Similar to the notion of bounded rationality (Simon 1957), which argues individuals strive to be rational but are limited in their ability to do so, we propose that group members strive to form functional hierarchies that will serve group goals, but are similarly limited in their ability to do so. Individuals aim to allocate status in a merit-based fashion that will benefit groups and their members, but their efforts are constrained by a number of critical obstacles such as the opacity of individual merit and the resisting force of self-interest among members. While group members' intentions to allocate status on the basis of merit result in hierarchies that are based on individuals' perceived value to the group, they are also challenged by the many difficulties in assessing merit and various undesirable behaviors that are encouraged by the lure of status incentives.

In the review below, we first outline the basic tenets of functionalist models of status and summarize empirical evidence supporting this broad perspective. We then discuss wide-ranging evidence that hierarchies often fail to live up to the ideals suggested by functionalism. Finally, we outline a bounded functionalist model of status and summarize evidence to support its claims. By doing so we describe how such a model might integrate and synthesize the many complex and seemingly contradictory findings within the status literature.

Functionalist Perspectives of Status

Many scholars across social scientific disciplines have adopted a functionalist view of status processes (e.g., Anderson et al. 2006; Blau 1964; Gruenfeld and Tiedens 2010; Homans 1950; Magee and Galinsky 2008; Simpson et al. 2012; Thibaut and Kelley 1959; Willer 2009). These scholars vary in some of their specific hypotheses or intellectual traditions, but converge on the idea that status facilitates group welfare by serving numerous social functions. More specifically, status hierarchies are thought to help groups solve some of their most fundamental problems.

One of these problems is collective decision making. Group members possess different perspectives and motivations, and therefore often disagree over the

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[1] Note that here we specifically analyze the *group-level* effects of status hierarchies, setting aside the equally important individual-level effects of status hierarchies. Research is divisive on this issue as well, with some work suggesting that status-striving undermines individual well-being (Nickerson et al. 2003) and that much discrimination on the basis of characteristics like race, class, and gender occurs through status processes in groups. At the same time, other work emphasizes that status striving motivates collectively minded behavior (Willer 2009) and status attainment fosters happiness (Anderson et al. 2012) and health (Marmot 2004).

group's collective goals and the appropriate strategies to pursue those goals. Group members must find a way to make decisions in a peaceful, effective, and efficient manner (e.g., Cartwright and Zander 1953; Levine and Moreland 1990; Van Vugt et al. 2008). A second problem is group locomotion or collective action. Groups must motivate individual members to behave in ways that contribute to the group's success, even when such behavior might require personal investment and individual sacrifice (e.g., Hardin 1982; Kerr and Tindale 2004; Latane et al. 1979; Willer 2009). A third problem is the coordination of individual behavior. It is not enough for groups to have a clear vision and for members to act on it. They must also coordinate members' behavior so that they work in concert toward collective success—for example, by allocating complementary tasks and responsibilities to each individual, maintaining effective communication among members, and minimizing intragroup conflict (e.g., Blau and Scott 1962; Cartwright and Zander 1953; Hinsz et al. 1997; Levine and Moreland 1990).

Collective Decision Making

Hierarchies are thought to help groups solve problems with collective decision making by giving disproportionate control to higher-ranking members (Van Vugt et al. 2008). High-status individuals are granted greater control over decisions and allowed to direct others' actions, whereas lower-ranked individuals are expected to defer to others and keep their opinions to themselves (Bales et al. 1951; Berger et al. 1980; Goffman 1967; Keltner et al. 2003). This concentration of control at the top of the hierarchy is thought to help groups make decisions more efficiently and avoid conflict (Cartwright and Zander 1953; Van Vugt et al. 2008).

As evidence, Bales' classic studies of small groups found that the top-ranking group members spoke 15 times more frequently than the lowest-ranking group members and nearly five times more than the next highest-ranking members (Bales et al. 1951). Buzaglo and Wheelan (1999) found that higher-status members of a team dominated team discussions, speaking more than 75 % of the time, even though they represented only 30 % of the team's membership. Anderson and Kilduff's (2009) study of four-person teams found that 94 % of the time, teams chose the first proposal offered by any member as their final answer—and that the top-ranking members were nearly three times more likely to provide the first proposal than anyone else.

Empirical evidence also supports the argument that a clear hierarchy reduces intragroup conflict. When individuals agree over their relative status, groups have lower levels of conflict, higher levels of cohesion, and increased trust among their members (Anderson et al. 2006; Bendersky and Hays 2012; Kilduff et al. 2013). For example, Greer et al. (2011) found that teams with clearer hierarchies engaged in less process conflict, performing better on joint tasks as a result. In Tiedens and Fragale's (2003) studies hierarchical dyads (wherein one person behaved dominantly and the other behaved submissively) were more cohesive than egalitarian dyads (wherein both people behaved dominantly or both submissively).

In facilitating collective decision making, hierarchies are also thought to increase the quality of group decisions by giving disproportionate control to the individuals perceived to be the most competent. Decisions about a group's goals or strategies are often fraught with ambiguity and intimidating complexity. Competent individuals presumably make better decisions for the group than would those with lesser or average acuity (Berger et al. 1980; Davis and Moore 1945; Eibl-Eibesfeldt 1989; Ridgeway and Diekema 1989). Accordingly, groups strive to put their most competent members in charge by allocating influence to those who seem most expert.

Much evidence shows that groups accord higher status to individuals believed to possess greater competence, intelligence, and expertise (e.g., for reviews, see Bass 1981; Berger et al. 1980; Driskell and Mullen 1990; Lord et al. 1986; Van Vugt 2006). In fact, perceived competence may be the most consistent predictor of status across social groups, and the effects of perceived competence can be quite large. For example, Anderson and colleagues have found peer-rated competence in groups to predict status with correlations in the .60's and .70's (Anderson and Kilduff 2009; Anderson et al. 2012). Further, groups perform better when they put their most competent members in charge (Maier 1967; Roby et al. 1963).

Group Locomotion

In addition to collective decision making, groups also face the challenge of motivating their members to make costly contributions to group efforts. Groups must motivate individual members to set aside their personal motives and agendas and contribute to the group's collective endeavors. Status hierarchies are believed to provide social, material, and psychological incentives that help accomplish this goal (Barnard 1938; Blau 1964; Davis and Moore 1945; Frank 1985; Hardy and Van Vugt 2006; Homans 1950; Keltner et al. 2008; Thibaut and Kelley 1959; Willer 2009). For example, higher status involves greater respect and admiration (Berger et al. 1972) and provides higher levels of autonomy (Bales et al. 1951), power (Anderson et al. 2012), self-esteem (Leary et al. 1995), subjective well-being (Tay and Diener 2011), lower physiological stress (Gruenewald et al. 2006), and material resources (Willer 2009).

Groups allocate higher status to members perceived as contributing to the group's goals. Those perceived as making important contributions are granted higher status, whereas those seen as making fewer contributions, or even as undermining a group's success, are assigned lower status. By rewarding group-oriented behavior, status compels individual members to work toward the group's goals, facilitating collective success (Barnard 1938; Blau 1964; Thibaut and Kelley 1959). Individual members are driven to sacrifice and contribute to the group's welfare in order to earn the myriad rewards that come with being on top of the ladder.

Much empirical evidence validates these arguments. Field studies of organizations show employees who help their fellow coworkers are accorded higher status at work (Blau 1964; Flynn 2003; Flynn et al. 2006; Roethlesberger and Dickson 1939; Sutton and Hargadon 1996). Laboratory research has also found that individuals

who give more generously in social dilemmas are accorded a more "positive image score," reflecting their reputation as prosocial (Fehr and Fischbacher 2003; Nowak and Sigmund 1998). Researchers also find that individuals who contribute more to (or take less from) a group fund attain higher status because they are viewed as valuing the group (Hardy and van Vugt 2006; Willer 2009).

Moreover, research demonstrates that the lure of status encourages self-sacrifice for group ends (Willer et al. 2010). When individuals face the possibility of attaining higher status, such as when their behavior is more public, they tend give more generously (Fehr and Fischbacher 2003; Milinski et al. 2002a, b, 2006; Nowak and Sigmund 1998). Baumeister's (1982) review of the self-presentation literature found that when people believe their behavior is public, they give more to charities (e.g., Satow 1975) and help those in immediate danger (Gottlieb and Carver 1980). Therefore, people behave in a more group-oriented fashion when it will benefit their status the most. Studies of "competitive altruism" show that status motives can heighten individuals' generosity (Hardy and van Vugt 2006; Barclay and Willer 2007). Many tribes in the Pacific Northwest Coast engage in the ritual of potlatching, wherein tribal chiefs compete to give away their possessions in order to attain the most respect and prestige (Eibl-Eibesfeldt 1989). Griskevicius et al. (2010) also found status concerns can drive communally minded behavior: When they experimentally boosted participants' desire for status they preferred environmentally friendly products over better performing, more luxurious products. Further, consistent with prior work, this effect was more pronounced when purchases were made in a public setting, such as in a store, as opposed to shopping online at home.

In addition to promoting generosity and helpfulness, studies have shown that status can motivate stronger effort and performance. Research on social facilitation has long shown that in front of an audience (where status gains are at stake), people work harder and perform better on tasks at which they are well practiced (Zajonc 1965), and that these audience effects are driven by concerns over social evaluation of their competence (e.g., Bond 1982; Cottrell et al. 1968), suggesting status concerns might be key to the effect. Kilduff and colleagues' work on rivalry shows that when individuals compete with someone they deem a rival, they feel their status is at stake (Kilduff et al. 2012). These feelings of rivalry in turn motivate people to work harder to perform better (Kilduff et al. 2010). Research on Tesser's (1988) Self-Evaluation Maintenance model also shows that individuals work harder and perform better when their friends outperform them on a laboratory task or in school—especially when they feel personally invested in that domain (and thus likely feel their status is at stake).

Finally, by providing higher status to individuals who contribute more, groups also keep their strongest contributors committed to the collective and dissuade those individuals from leaving the group. Thibaut and Kelley (1959) argued groups use status to compensate individuals who provide a great deal of value to the collective, and who might have alternative groups they could join: "The status system constitutes a form of currency with which members upon whom the group is highly dependent may be paid off." (p. 232). This commitment mechanism has been proposed by a number of scholars (e.g., Barnard 1938; Homans 1950; Frank 1985; Willer 2009).

As evidence, many studies have found that when individuals are accorded higher status they are more committed to their group. Huo et al. (2010) found that when people felt they had higher status in their group they were more committed to it and less likely to leave. Helping establish the causal role of status on group commitment, Willer (2009) as well as Kennedy and Anderson (2013) led randomly selected individuals to believe their laboratory group accorded them high status and led others to believe their group accorded them low status. As expected, following this feedback, those in the high-status condition were more committed to the group.

Intragroup Coordination

Making decisions and motivating members is not the only problem groups must address to be successful. It is also critical for groups to coordinate their members' behavior so that their contributions combine in a maximally effective and efficient way. Hierarchies are thought to help groups address this challenge in a number of ways. As previously mentioned, hierarchies putatively facilitate an orderly division of resources and influence among group members (Barnard 1938; Berger et al. 1980; Chance 1967; Durkheim 1893/1997; Katz and Kahn 1966; Keltner et al. 2008; Leavitt 2005; Magee and Galinsky 2008; Marx 1844/1964; Mintzberg 1979; Parsons 1961; Tiedens et al. 2007). Differential allocation of responsibilities and control helps mitigate the common problem of having "too many cooks in the kitchen," wherein too many individuals try to take on a leadership role.

Hierarchies are also believed to allow information to flow between members more efficiently and for the integration of this information to occur more easily (Bavelas 1950; Leavitt 2005; Scott 1998; Vroom 1969; Williamson 1975). For example, in the prototypical pyramidal hierarchy, information travels up through hierarchical levels until it reaches group leaders. The leaders integrate this diverse information and make relevant decisions. Their decisions then flow down to each respective hierarchical level and are implemented according to leaders' plans.

Supportive evidence for these arguments can be found in classic laboratory studies of communication structure by Bavelas and colleagues (e.g., Bavelas 1950; Leavitt 1951; Christie et al. 1952). These studies experimentally manipulated the communication channels between different group members while they worked on a joint task, allowing some members to directly communicate with each other while precluding others from communicating. For example, in a four-person group with a "wheel" structure, one person was allowed to communicate with all others, while all other members could only communicate with this central person, and all messages thus had to flow through that central person. In contrast, in a "comcon" configuration, all members could communicate with each other, and a priori, no member was more central in the communication flow than any other. These different communication structures determined the steepness of the group's hierarchy (e.g., Bavelas 1950; Leavitt 1951; Shaw 1954). Structures such as the wheel tended to have a

more hierarchical structure, with the central members receiving more leadership nominations and having more control over the decisions made by the group (Mulder 1960). Shaw's (1964) review of this literature found that more hierarchical structures were advantageous for simple tasks, leading to faster solutions 78 % of the time and to fewer errors 90 % of the time.

Finally, hierarchies are thought to coordinate group activity by providing a system in which individual members model their behavior after high-status individuals. A large body of work has shown that individuals pay inordinate amount of attention to those with high status (Chance 1967; Fiske 1993; Keltner et al. 2003). In fact, some have considered attention and status to be so closely intertwined that attention should be viewed as a defining feature of status (Chance 1967). As evidence, Cheng et al. (2013) used eye-tracking techniques and found participants spent more time visually attending to high-status group members than low-status group members, even after they controlled for differences in how much the group members spoke. In fact, status accounted for 46 % of the variance in where individuals directed their attention.

Attention to those with high status likely reflects a general preoccupation with status, but it also likely arises from a drive to model those at the top of the hierarchy (Eibl-Eibesfelt 1989; Festinger 1954; French and Raven 1959). By mimicking high-status individuals' behavior, individuals conform to group norms and behave in ways valued by the group. Anderson et al. (2003), for example, used laboratory procedures to induce and assess emotional responses in college roommates over the course of an academic year. They found roommates became emotionally similar over time; yet it was the roommates with lower status in the dormitory that made virtually all of the change necessary for this convergence to occur. In fact, high-status roommates' emotions at the beginning of the year strongly predicted low-status roommates' emotions at the end of the year ($r=0.69$). By contrast, low-status roommates' initial emotions did not significantly predict high-status roommates' later emotions ($r=0.19$).

Hierarchies also help to solve collective action problems by coordinating both sequences and amounts of contributions via status processes. In a laboratory study in which participants could contribute to a group fund, Simpson et al. (2012) found that higher-status individuals tended to be the first contributors, overcoming the collective action start-up problem. Further, once they have contributed, high-status individuals exert influence over other group members regarding how much they should give to group efforts. Kumru and Vesterlund (2010) randomly assigned participants to be high or low status in a social dilemma game context. In half the groups, high-status participants were designated to make the first decision as to how much they would contribute; in the remaining half, the low-status participant made the first decision. First-movers' contribution decisions were relayed to the second contributor, who then decided how much of his or her private endowment to contribute to the public good. They found lower-status second movers mimicked the contributions of high-status first movers far more than higher-status second movers mimicked first movers.

Status Hierarchies and Group Performance

Additional evidence supporting the functionalist perspective of status stems from studies examining the effects of hierarchy on overall group performance. For example, Carzo and Yanouzas (1969) examined 15-person groups tasked with estimating how much demand existed for a product in various markets and, accordingly, how much of the product they should order from suppliers. They found that groups performed better in a taller (three-level) than in a flatter (two-level) hierarchy. Maier and Solem (1952) found that groups working on a math task performed better when they had a leader than when they did not. Main et al. (1993) found a positive relation between pay disparity within executive teams and firm performance. Ronay et al. (2012) found that teams whose members differed in their power "mindset" or in their testosterone levels performed better in laboratory tasks. Halevy et al. (2013) found that pay disparities among members of professional basketball teams predicted winning percentages and a host of individual-level performance metrics (e.g., assists, defensive rebounds, field goal percentages).

Evidence of Dysfunction Wrought by Status Differences

The evidence cited thus far suggests that the case for functionalism is quite strong. A large number of scholars from diverse intellectual traditions have espoused arguments consistent with the functionalist view of status hierarchies. In addition, some evidence supports many of functionalism's basic claims, showing that clear status hierarchies can mitigate intragroup conflict and that status can promote group-oriented behavior. However, the above arguments and evidence notwithstanding, there is also considerable empirical support for the critical view of the effects of status hierarchies in which status differences have primarily deleterious effects on groups. Indeed, the empirical record paints a much more complicated picture than the functionalist ideal would suggest. It shows, for example, that status hierarchies are often not based on individual competence and commitment, and that hierarchical groups often fare worse than groups with flatter structures. We review this evidence below.

Breakdowns in the Status Organizing Process

Functionalists argue that groups strive to give higher status to individuals who are more competent and committed to the group's goals. By doing so, groups allocate influence and leadership on the basis of relevant skills, motivate individuals to make greater contributions to the group, and help retain their most talented and group-oriented individuals as members. However, much research suggests that groups often fail to accord status meritoriously, placing incompetent or less committed individuals in positions of high status. Failures of status allocation give the

wrong individuals disproportionate control over the group and its decisions, thereby decreasing the group's effectiveness (Barnard 1938). In this review, we focus on two individual characteristics on which groups strive to base status differences: task competence and commitment to the group. We do not mean to imply these are the only individual characteristics relevant to status (e.g., Anderson et al. 2001); but use them as examples because they are highly related to status standing in most group settings (Van Vugt 2006).

Task Competence High-status group members' duties and responsibilities can be social in nature; for example, they are often expected to inspire their group, keep the peace among its members, and facilitate communication between individuals (Van Vugt et al. 2008). However, in most group settings they also must understand the technical problems faced by the group. Having task competent people in charge helps groups perform better (for a review, see Bass 1981). Therefore, many groups prioritize task competence over other factors like social skills when allocating influence (Lord et al. 1980). On a team of engineers, for example, technical ability would likely be seen as more important than the ability to communicate.

However, groups often fail to base their status hierarchies on differences in task competence. For example, much research in the Status Characteristics Theory tradition finds that group members base status allocation on characteristics like gender, race, social class, and physical attractiveness, assuming that these characteristics are associated with general competence, even when they are not (Berger et al. 1972, 1980). Similarly, individuals higher in self-confidence are also more likely to be selected leaders (Edinger and Patterson 1983; Stogdill 1948), though self-confidence is not highly predictive of actual abilities (Dunning et al. 2004; Harris and Schaubroeck 1988).

One particularly telling case concerns the personality trait of dominance. An abundance of research shows that individuals higher in trait dominance tend to attain higher status than others in groups (Anderson and Kilduff 2009; Gough et al. 1951; Judge et al. 2002; Lord et al. 1986; Mann 1959; Megargee 1969). In fact, one meta-analysis found trait dominance to predict status in groups more consistently than any other individual difference variable, including intelligence (Lord et al. 1986). Another meta-analysis including 73 independent samples found dominance to have the strongest relation to status in groups of all personality dimensions examined (Judge et al. 2002).

However, dominance is unrelated to many of the competencies putatively required to attain status. For example, in prior research, individuals high in trait dominance attained status in groups that discussed an ethical dilemma (Aries et al. 1983), worked on mechanical tasks (Megargee et al. 1966; Smith and Foti 1998), and allocated funds to employees in a hypothetical company (Anderson and Berdahl 2002). It is difficult to believe that dominant individuals possessed any special expertise in ethical issues, mechanical tasks, or organizational compensation systems. Further, evidence suggests that trait dominance is largely unrelated to general cognitive abilities (Dodge 1937; Donahue and Sattler 1971; Gough 1949; Schippmann and Prien 1989; Smith and Foti 1998). Of course, dominance might be related to social skills

such as the ability to persuade others, but these social skills are often insufficient for successful leadership in the absence of technical abilities (Van Vugt 2006). The empirical evidence thus suggests that groups allocate status in part on the basis of differences in characteristics unrelated to competence, like gender, race, attractiveness, and dominance.

Commitment to the Group's Success A second individual characteristic on which groups strive to allocate status is group orientation (e.g., Ridgeway 1982). Groups are thought to have a greater chance of success when those at the top of the status hierarchy are committed to the group's well-being rather than their personal agenda. Examples abound of selfish high-status individuals in corporations, politics, and religious organizations who led their groups to disastrous consequences, and empirical research has documented the benefits of having prosocial people in high-status positions. A large meta-analysis covering over 85 years of research showed that agreeableness, which involves a greater concern for others (John and Srivastava 1999), is a significant predictor of leaders' effectiveness (Judge et al. 2002). In 14 samples that included leaders from over 200 organizations, Judge and Bono (2000) also found that agreeableness was consistently related to more effective leadership styles. Bass (1981) also summarizes a range of evidence that groups are more likely to thrive with collectively minded leaders and fail with selfish leaders.

However, despite the benefits of basing status on group orientation, studies suggest that much of the time groups fail to accord high status to prosocial individuals. For example, a meta-analysis showed that agreeableness has the weakest effects on leader emergence of all Big Five personality traits (Judge et al. 2002). Similarly, researchers have found null effects for agreeableness on status in diverse kinds of organizations (Anderson et al. 2008) and in social-living groups like dormitories, fraternities, and sororities (Anderson et al. 2001). McClelland and Boyatzis (1982) even found that individuals lower in the need for affiliation—which involves less of a desire for close and friendly interpersonal relationships—were more likely to ascend their organization's hierarchy. A recent study also found that groups tend to select more "social" rather than "prosocial" leaders, despite their intentions to select prosocial leaders (Livingston et al. 2010). And, even though women tend to be more prosocially minded and have more concern for others than men (for a review, see Feingold 1994), there is vast evidence that women are selected as leaders less often than men (for a review, see Eagly and Karau 1991). Not only do groups often fail to accord prosocial individuals higher status, they even sometimes systematically place more selfish individuals at the top of the status order. Recent research has shown that the desire for higher social rank is associated with selfishness (Willer et al. 2013), and studies have consistently shown that individuals who desire higher rank tend to achieve it (Flynn et al. 2006; McClelland and Boyatzis 1982; Winter 1988). Thus, while experiments find that, all things being equal, more prosocial individuals tend to be viewed as higher status (Willer 2009), other traits correlated with low prosociality (e.g., desire for status, dominance, gender) may often reverse this effect in field settings, with less prosocial people earning high rank as a result.

Status Hierarchies and Group Welfare

Another test of the functionalist view of status hierarchies is whether groups fare better when they have a more hierarchical status structure than when they have a flatter status structure. Groups with a steeper status hierarchy—that is, those with larger asymmetries in members' status—should function better than groups with a flatter structure. Above, we described a few studies showing that more hierarchical groups sometimes outperform flatter groups. However, much evidence also shows that groups with steeper status hierarchies can fare *worse* than those with flatter and more egalitarian structures, both in terms of performance and group members' attitudes.

In terms of group performance, Torrance (1955) examined three-person Air Force flight crews and found "real" crews (that had been actually working together for a long time) performed worse on a math task than crews of strangers constructed temporarily for the sake of the experiment—and that this effect emerged because the real crews were more hierarchical than the temporary crews. For example, when lower-ranked members of real crews knew the correct answer to the problem they were less able to convince the others to accept it. Becker and Blaloff (1969) also manipulated whether three-person groups had an appointed leader or not and had them perform a task in which group members estimated the demand for products based on a series of dimensions, finding that more hierarchical groups performed worse than flatter groups. Berdahl and Anderson (2005) measured the degree to which undergraduate student teams who worked on a group project together naturally formed more centralized leadership structures (i.e., leaders with more control over group activities), and found that more centralized groups performed worse on the team project and received lower project grades. Ivancevich and Donnelley (1975) examined 295 salespeople in marketing departments of three large organizations and found that those working in a more hierarchical organization performed worse (i.e., received fewer orders per client visited) than those working in a flatter organization.

Studies of compensation systems are relevant as well. Pay differences often signify asymmetries in status (Davis and Moore 1945; Desai et al. 2010; Frank 1985; Bloom and Michel 2002). For example, individuals use their relative pay as a sign of how respected and valued they are relative to coworkers—and thus as a sign of where they fall in the workplace status hierarchy (Desai et al. 2010). Studies of compensation systems also place doubt on the benefits of status differences, showing that greater discrepancies in pay across employees of organizations are associated with lower performance (Bloom 1999; Cowherd and Levine 1992; Hambrick and D'Aveni 1992; Pfeffer and Langton 1993).

Status hierarchies can also dampen group members' attitudes and affect. Shaw's (1964) review of communication structure studies found that in 89% of the relationships he reviewed, there was a negative effect of hierarchy steepness on member satisfaction. Therefore, while more hierarchical structures facilitated better performance when the task was simple, they almost always predicted worse group

member satisfaction. Becker and Blaloff's (1969) aforementioned research found that groups working in a hierarchical structure were more frustrated than groups working in egalitarian structures. In Pierce et al. (1989), managers worked on organization simulation tasks in which their company was more or less hierarchical. In the more hierarchical organization, individuals had lower levels of organization-based self-esteem. Meltzer and Salter (1962) found that steeper hierarchies were related to lower job satisfaction, and this relationship emerged across organizations of different sizes. Smith and Tannenbaum (1963) found that more hierarchical chapters of the League of Women Voters had lower member loyalty; they also found that more egalitarian decision making in divisions of a delivery company predicted better morale. In a study of 2976 managers outside the United States, Porter and Siegel (1965) found that employees of organizations with steeper hierarchies were less satisfied than those in flatter organizations. Carpenter's (1971) study of schoolteachers found that teachers were less satisfied when working in a more hierarchical organizational structure; in particular they reported lower satisfaction with their autonomy and authority levels. Tannenbaum et al. (1974) found that less hierarchical organizations had higher worker motivation; though this effect did not extend to satisfaction. Ivancevich and Donnelley's (1975) study of salespersons found that working in an organization with a steeper hierarchy was related to being less satisfied and experiencing more anxiety and stress than working for a flatter organization. Again, studies of discrepancies in pay across employees show similar results for attitude-related outcomes (Bloom and Michel 2002; Pfeffer and Langton 1993; Trevor and Wazeter 2006; Wade et al. 2006). In sum, therefore, there is an abundance of evidence that status hierarchies can lead to worse group outcomes rather than better.

A Bounded Functionalist Account of Status

The above-reviewed body of research suggests that the links between status hierarchies and group welfare are complex. On the one hand, many studies support basic claims espoused by functionalists, suggesting that status differences can facilitate collective decision making, encourage costly contributions to group efforts, and coordinate group members' behavior. On the other hand, many studies portray status hierarchies as dysfunctional, placing the wrong individuals in high-status positions, basing influence on characteristics unrelated to actual competence, and dampening groups' overall morale and productivity.

What conclusions can be made from these contradictory findings? Should we eschew the functionalist view entirely? Some scholars believe so, arguing that status hierarchies do not emerge to serve any social function and instead are mere by-products of individual status striving and competition (Lee and Ofshe 1981; Mazur 1985). According to this perspective, status differences emerge because individuals compete for status, and some win these contests while others lose. The bases upon which rank is accorded are unrelated, or only loosely related, to individuals' ability

and willingness to benefit the group. The putative "functions" of hierarchies, such as reduced intragroup conflict and group member coordination are mere byproducts of resolved status contests. Once status competition has been decided, individual members tend to stop fighting (Bernstein 1981), and those higher in status take charge of allocating tasks and responsibilities.

However, based on the available evidence, we believe it is inappropriate to throw out functionalism entirely. Instead, we propose that a more accurate way to view status hierarchies is from a *bounded functionalist* perspective. This perspective is akin to Simon's (1957) notion of bounded rationality, which argues that individuals are not perfectly rational in maximizing their utility, as classic economic theory might suggest. Rather, they are constrained in a number of ways, including cognitive limitations and unavailable information. Individuals thus strive to make decisions rationally, but fall short given these constraints.

In a similar way, we believe group members generally intend to form functional hierarchies that will serve their goals effectively, but are limited in their ability to do so. Group members strive to place the individuals at the top of the status hierarchy who offer the most value to the group and to overcome problems of individual self-interest by offering status as a reward for costly contributions that benefit the group. However, group members often fail to arrive at status hierarchies that serve the functions they are intended to, precisely because of factors cited by scholars critical of status inequalities. In the following section, we outline some basic ideas of this bounded functionalist perspective and discuss some of the obstacles groups face in developing functional status hierarchies. In doing so, we outline why bounded functionalism might be the most accurate and useful view of status hierarchies.

The Difficulty in Discerning Individual Merit

Although groups might often allocate high status to people who are not the most competent or committed to the group's success, studies suggest that group members consistently *strive* to do so. As mentioned earlier, there tend to be very strong correlations between individuals' perceived competence and group orientation and their status in a group (e.g., Anderson and Kilduff 2009; Ridgeway 1982). That is, groups accord higher status to individuals they *believe* to be more expert or knowledgeable and to those they believe are committed to the group's success—even if in fact they often fail to allocate status to the people who actually are more competent or group-oriented. Similarly, when group members allocate greater status to individuals on the basis of factors like gender, race, and social class, they generally do so because they view these characteristics as markers of greater competence (Berger et al. 1972). Reliance on such characteristics often weighs more heavily on the group's status hierarchy than information on task-specific competence, leading to diminished group performance (e.g., Thomas-Hunt and Phillips 2004).

Evidence also suggests that group members have negative views of individuals who try to grab status in the group, but who may not be the most competent or group-oriented (Keltner et al. 2008; Ridgeway and Diekema 1989). For example, in

a study by Ridgeway and Diekema (1989), confederates attempted to attain higher status in a group through aggression and domination and not necessarily well-reasoned ideas and arguments. Those confederates were met with strong resistance by their group and failed to attain status. Anderson et al. (2006) also found individuals who claimed higher status than their group believed they deserved were rejected and ostracized (see also Anderson et al. 2008).

However, to successfully allocate status to those who are *actually* the most competent or group-oriented, groups must be able to discern those characteristics accurately in each individual member. As prior work has shown, this process is quite difficult. Individuals' levels of competence and group-orientation reside within them, hidden from others. In most group settings, there is little objective evidence of how talented or prosocial an individual is. Groups are thus forced to judge individuals' inner characteristics based on external observable cues such as outward appearance, nonverbal behavior, or style of speaking.

Take competence for example. As discussed earlier, groups use static characteristics such as gender, race, age, and physical attractiveness as cues of competence, even when those characteristics are wholly unrelated to actual knowledge or ability (e.g., Berger et al. 1972, 1980; Ridgeway et al. 1998; Thomas-Hunt and Phillips 2004). In addition, group members tend to use nonverbal behaviors to infer competence, such as whether the person uses more certain vocal tone (Driskell et al. 1993; Paulhus and Morgan 1997; Ridgeway 1987), speaks more often and in a fluid and assertive way (Carli et al. 1995; Driskell et al. 1993; Paulhus and Morgan 1997; Reynolds and Gifford 2001; Ridgeway 1987), speaks in a lower vocal pitch (Klofstad et al. 2012), uses more direct eye contact (Driskell et al. 1993; Imada and Hakel 1977; Mehrabian and Williams 1969; Ridgway 1987), and exhibits a relaxed and expansive posture (Carli et al. 1995; Imada and Hakel 1977; Ridgeway 1987). These behaviors, however, may not be related to actual competence either (e.g., Anderson et al. 2012). Thus, in trying to accurately discern individual competence, groups frequently misuse the cues available to them, thereby contributing to misalignment between merit and status.

In sum, the opacity of inner individual characteristics leads groups to sometimes accord high status to the wrong members. This misallocation of status likely helps explain the weak linkage between merit and status observed in many groups. Moreover, it might also help explain why steeper hierarchies often predict worse group outcomes. After all, if incompetent individuals are given a particularly disproportionate level of control in a group, one would expect that group to fare particularly poorly.

Individual Desire for Status

An additional obstacle to functional hierarchies is the human desire for status. Status strivings lead people to engage in a range of goal-oriented behaviors aimed at attaining and maintaining high status in their groups. Many of these behaviors can help promote group welfare, as described above; for example, the desire for status can spur prosocial behavior and contributions to the collective (e.g., Griskevicius

et al. 2010; Sutton and Hargadon 1996). At the same time, however, the desire for status can lead individuals to behave in ways that hamper group success. As many scholars have argued, humans have a powerful drive for status and the rewards it brings (Barkow 1975; Frank 1985; Hogan 1983; Lind and Tyler 1988; Maslow 1943). It appears that this strong motive can lead not only to prosocial acts but also self-interested, even antisocial, behavior.

For example, evidence suggests individuals take advantage of groups' reliance on external "competence cues" by behaving in ways that make them appear more competent or committed to the group's success than they actually are. The self-presentation and impression management literatures have widely documented the tendency to "self-promote" or signal one's competence to others (for reviews, see Baumeister 1982; Leary and Kowalski 1990; Schlenker 2012). People tend to publicly portray their competence in disproportionately positive ways, highlight their abilities and downplay weaknesses, and take credit for successes while blaming others for failure (Baumeister 1982). People also often defend past failed decisions, and even invest further in those decisions, rather than admit error (e.g., Staw 1976; Tetlock 2005).

The desire for status also appears to promote competitive behavior that is unhelpful to groups. For example, in a study by Godfrey et al. (1986), individuals trying to appear more competent avoided behaving positively toward others. Blau (1964) as well as Flynn et al. (2006) found that the desire for status led individuals to avoid asking others for help and assistance, requests that would be good for the group, but which individuals believe have the effect of granting higher status to others (Blau 1964; Flynn 2003; Flynn et al. 2006). Moreover, seeking help risks exposing one's own incompetence. As Tessler and Schwartz (1972) found, individuals were hesitant to seek help when failing on a laboratory task, except when they could blame their failure on external causes—thereby avoiding attributions of incompetence. The desire for status might also prevent people from agreeing with others' opinions, regardless of the strength of that person's argument (for a review, see Baumeister 1982). Therefore, the individual drive for higher status can diminish a range of interpersonal behaviors that would help the group, such as expressing positivity toward others, asking for help, and agreeing with and supporting valid ideas.

Some evidence suggests that people sometimes undermine others in pursuit of status, thereby harming relationships between individual group members. Kyl-Heku and Buss (1996) found that people exclude and derogate others in order to get ahead. Much research suggests that status motives can even drive aggressive behavior toward others deemed a threat (Borden 1975; Cohen et al. 1996; Griskevicius et al. 2009; Miller 2001). Research on Tesser's Self-Evaluation Maintenance model suggests people specifically undermine the performance of others who pose more of a status threat (Tesser and Smith 1980), and even distort others' performance downward (Tesser et al. 1984). Kilduff's work shows that people resort to unethical and cheating tactics to beat rivals who challenge their status (Kilduff et al. 2012).

In sum, the empirical evidence suggests that the human desire for status might impede the formation of merit-based hierarchies. While the lure of status can promote many behaviors that facilitate collective success, it also seems to promote

a host of behaviors that can dampen group functioning. Individuals seeking status often behave in ways that make them appear more competent or group-oriented than they actually are, they avoid interactions with others that might boost others' status, and they even can derogate others and act hostilely toward them.

Summary and Discussion

The evidence reviewed in this section suggests that while groups strive to form functionalist status hierarchies, they are constrained in their ability to do so by considerable obstacles. For example, while groups strive to base status differences on individual differences in merit, they are limited by the opacity of individuals' inner characteristics. It is quite difficult to know which individuals are more competent or group-oriented than others, and therefore groups make mistakes in allocating status across individuals. To make matters more complicated, group members' efforts to reward competence and group orientation create rewards for those individuals who can effectively feign these characteristics, leading them to jockey for status by making themselves appear more talented or group-oriented than they actually are. In fact, the individual desire for status appears to promote many behaviors that work against the putative functions of status hierarchies.

The bounded functionalist view suggests potentially fruitful avenues for future research. For example, future work could study which factors affect the degree to which group hierarchies are functional for the group. Based on the above review, we might expect hierarchies to benefit the group most when group members' relevant skills are more visible, the distribution of relevant abilities is unequal, and where group coordination is especially important, e.g., where group activities are highly interdependent (e.g., Halevy et al. 2013). Conversely, status hierarchies will likely be less beneficial, or even dysfunctional, in groups where task-relevant skills are unknown, difficult to perceive, or easy to feign, where relevant abilities are equally distributed, where status ambitions and task competence are negatively or uncorrelated across the group membership, and where group performance depends on eliciting high levels of participation from all group members.

Future research could also investigate various empirical implications of this bounded functionalist view. For example, our model may help explain why even very flawed status hierarchies are often stable and legitimate. Because group members largely intend to assign status on the basis of real merit, inaccuracies in the status hierarchy are largely invisible to them. Further, while many bases of status are generally unrelated to competence or group commitment (e.g., gender, race, dominance), other bases of status are relevant (e.g., specific skills, training, proven willingness to help the group), meaning that status hierarchies will often be "semi-functional." Hierarchies based on a mix of factors relevant and irrelevant to individual merit likely results in hierarchies that are positively, if imperfectly, correlated with individuals' value to the group. Such a positive correlation may be enough to create the impression that a given hierarchy is working to benefit the group, cloaking their imperfections, and helping them persist over time.

Conclusion

In trying to understand the ubiquity of status differences in human groups, many theorists have adopted the functionalist view that status helps social groups solve some of their most important problems. Much empirical evidence supports this perspective, showing that status facilitates collective decision making, encourages individual contributions to the group, and coordinates diverse members' behaviors. At the same time, however, much evidence also demonstrates that status hierarchies can undermine group functioning.

To synthesize these seemingly contradictory findings, we proposed a bounded functionalist view of status. According to this view, group members intend to allocate status in a way that encourages effective group functioning. However, groups are constrained in their ability to do so by a number of limitations and obstacles. These obstacles help explain why hierarchies are often not strongly related to merit, and why groups with larger status differences among members can outperform hierarchical groups with larger status differences among members: if less competent but highly self-interested individuals attain high status and others have far lower status, the group will likely fare worse overall.

This perspective is meant to provide an alternative to strictly functionalist or strictly critical accounts of status hierarchies. That is, status differences do not appear wholly beneficial for groups as strong versions of functionalism might imply. At the same time, status differences do not appear to always assign status arbitrarily, foster undesirable intragroup competition, and undermine group functioning as critical accounts might imply. Instead, status hierarchies appear to emerge from a flawed process originating from largely group-oriented intentions. Groups strive to form status hierarchies based on competence and merit, which would help facilitate their overall success, but are simply limited in their ability to do so.

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Chapter 4
What's in a Name? Status, Power, and Other Forms of Social Hierarchy

Steven L. Blader and Ya-Ru Chen

This is an exciting time to be a researcher with a "social status" focus. Indeed, this book serves as a testament to the energy that currently surrounds the topic of social status (hereafter referred to simply as "status"). There is an enormous amount of activity on the topic, with much of the most recent and innovative work coming from psychology researchers. These recent developments are rather intriguing in light of the fact that status is, by no means, a new topic. Discussions about status have quite a long history within the social sciences (particularly in anthropology and sociology), consistent with the reality that status hierarchies emerge in all social settings and that status issues permeate social life (e.g., Anderson and Kilduff 2009; Blader and Chen 2012; Fiske 2010; Podolny 2005). Given these realities, why have psychology researchers not historically paid more attention to status, and, moreover, why have related research areas such as organizational behavior and management not paid more attention to this truly fundamental issue?

One possible factor might be cultural—some norms in the US, as well as in most Western countries, tend to proscribe the notion that individuals should (or even can) be rank-ordered on perceived levels of esteem and worthiness. Instead, norms maintain that everyone is unique and worthy—even if only in their own "special" way (Brewer and Chen 2007). This perspective is reflected in emerging work that shows the stigma attached to status striving (Kim and Pettit 2013). Another factor contributing to the lack of attention to status may be the interest in other hierarchical dimensions—power, in particular. That is, research has tended to focus on alternate ways of thinking about rank and hierarchy. Of course, it may well be that the flurry of work on the psychology of power has sparked recent interest in related concepts, and status research may be a beneficiary of that trend.

A third likely contributing factor—one that serves as a critical basis for this chapter—is that there has historically been relatively weak conceptual clarity around

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status and its distinction from other dimensions of hierarchy. Researchers have been inconsistent in defining status, often equating it with power, influence, dominance, prestige, and rank, to name a few. Confusion with other hierarchy-related notions may have stymied the development of a distinct literature on status. With no consensus about exactly what status is, it has not been possible for a progression of research on status in which new findings develop on the shoulders of prior findings. Note that this is not simply a measurement or methodological issue, although it certainly affects those. Rather, questions about how to best conceptualize status—and whether/how to distinguish it from related constructs—are high-level issues that lie at the heart of any future theorizing about status. We argue that this is a major issue for status researchers—the field's impact will be seriously limited if consensus is not reached about these issues. Such consensus is critical to the legitimacy and the development of the field.

Fortunately, we recognize a trend toward greater consensus around the appropriate and distinct conceptualization of status. We believe that this trend, which we will elaborate on below, has partially paved the way for the current surge of research on status. More importantly, current research builds on recent findings rather than ignoring or dismissing them, as has historically been the case with a great deal of status research. We hasten to add, however, that the trend toward greater consensus about how to conceptualize status is at a nascent stage; in fact, many remain skeptical not only about this emerging definition but also, more crucially, about whether status is distinguishable from other terms used to describe social hierarchy. Indeed, there may well be more skeptics than believers at this point. As with any such tensions in the literature, this equates to both an opportunity and a challenge. Convincing those skeptics should be a primary goal for status scholars, as it will bring broader recognition of the legitimacy of social status as a construct in its own right. This will, in turn, not only advance the study of status but will also facilitate integration of the insights of status research into other domains.

In this chapter, we explore in depth the conceptualization of status—and its distinction from related dimensions of social hierarchy. We outline what we regard as the current thinking about how to conceptualize status and how this conceptualization distinguishes status from related constructs. We focus largely on presenting empirical evidence that tests and supports these distinctions. Moreover, we will present a framework that organizes the many related, yet distinct constructs that describe social hierarchy. As we present this material, we feel it is important to also grapple with a fundamental question: Why does distinguishing status from these related aspects of social hierarchy matter—both for research and for a better understanding of social life?

Before jumping in, we feel it is worth taking a moment to expand on that last point and to explain why we place such importance on efforts to distinguish status from related constructs. To do so, we borrow an example from a different research area, namely research on the psychology of justice. Early justice research was squarely focused on distributive justice—on the finding that people are concerned about the perceived fairness of the outcomes they receive (Walster et al. 1978). An extraordinary amount of research was conducted around this fundamental insight about

distributive justice. As that work progressed, an intriguing finding emerged—people seemed to care not only about the fairness of their outcomes but also about the fairness of how those outcomes were decided and implemented (Lind and Tyler 1988; Thibaut and Walker 1975). This is the concept of procedural justice. This finding sparked a debate—was procedural justice really a distinct form of justice, or was it merely an elaboration on what was already known about distributive justice? (Tyler et al. 1997). Initial arguments attributed concerns over procedural justice to the instrumentality that procedures have for achieving preferred (i.e., fair) outcomes (Thibaut and Walker 1975). This reasoning essentially argues that procedural justice is simply part of the story about people's concerns over outcomes and, in particular, over distributive justice. Therefore, this line of reasoning argues against the distinctiveness of procedural justice and diminishes its value as a concept in its own right. While processes and outcomes can be defined differently, the difference between them does not matter because they are inextricably related to one another and because they are both rooted in the same fundamental concern (an instrumental concern over outcomes).

As many readers likely know, this was not the end of the story for procedural justice research. A subset of justice researchers pursued the notion that procedural justice is, in fact, distinct from distributive justice and that the emphasis people place on processes represents a different set of underlying concerns (Lind and Tyler 1988; Tyler et al. 1998). Those researchers emphasized that while procedural justice and distributive justice may covary, covariation should not be taken to indicate that they represent the same psychological dynamics; nor should it be interpreted as meaning that their distinction is not worthwhile. Early on, this was a provocative stance in a literature that had been developed entirely around the preeminence of distributive justice. Skepticism was widespread. Yet, through persistent and compelling empirical demonstrations, it became clear that procedural justice does, indeed, represent a concept distinct from distributive justice and, moreover, that the distinction is a notable one. Indeed, efforts to distinguish procedural justice have fundamentally impacted our understanding of what people seek from their groups (Blader and Tyler 2009, in press; Tyler and Blader 2000, 2002), emphasizing that they are seeking more than favorable or fair outcomes. In other words, researchers, who pushed forward and pursued the initially unpopular idea that procedural justice is distinct facilitated the development of a different model of the psychology of group membership.

The lesson from the trajectory of procedural justice research should inform current discussions about the distinctiveness of status from other dimensions of social hierarchy. Indeed, in many respects, it seems that we are embarking on a similar path, given the emerging but limited evidence that status is a distinct construct and the presence of many skeptics to this argument. Yet, the lesson of procedural justice research clearly indicates that it is important to pursue such questions since they can bear important fruit and, indeed, can even fundamentally alter our understanding of the psychology of social hierarchy. With this historical case analysis in mind, we now turn our attention to the question of how we conceptualize status.

What is Status? And How Does It Differ From Other Dimensions of Social Hierarchy?

The emerging consensus among many status researchers is to define social status as the prestige, respect, and esteem that a party has in the eyes of others (Anderson and Kilduff 2009; Blader and Chen 2012; Fiske 2010; Fiske and Berdahl 2007; see also Henrich and Gil-White 2001; Goldhamer and Shils 1939; Ridgeway 2001; Ridgeway and Walker 1995; Zelditch 1968). Status is an index of the social worth that observers ascribe to an individual or a group (Chen et al. 2012), and, as such, it is the outcome of observers' subjective evaluative process, which constitutes a critical part of the status conferral process (Ridgeway and Erickson 2000). As a result, status is wholly reliant on the views of these observers—individuals cannot have status if others do not regard them as high status. Status does not speak directly to the particular basis of evaluation, and, indeed, across contexts and across individuals, the basis for respect and esteem may vary dramatically. In some cases, status may emanate from competence, while in other cases, it may emanate from demographic characteristics such as race, age, and gender (Berger et al. 1972). Or it can be simultaneously determined by multiple factors, including these factors as well as others. Regardless, status refers to the evaluation of where a given target stands with regard to whatever the bases of respect or esteem may be.

This definition makes clear how social status relates to (and, in most cases, differs from) other dimensions of social hierarchy, such as power, socioeconomic status (SES), dominance, prestige, influence, and leadership. All of these are dimensions for rank-ordering actors in a given social context, but we argue that each is distinct from the others and, moreover, that each has some distinction from status. In particular, *power* refers to control over critical resources—i.e., outcome control (Dépret and Fiske 1993; Fiske 2010; Galinsky et al. 2003; Georgesen and Harris 1998, 2000; Gruenfeld et al. 2008; Keltner et al. 2003; Overbeck and Park 2001). *Socioeconomic status* (SES) refers to an individual's (or a family's) social position in relation to others, based on wealth, education, and occupation (Kraus and Keltner 2009). *Dominance* and *prestige* have been described in various ways. Henrich and Gil-White (2001) describe dominance as those approaches to achieving high social rank that are characterized by induction of fear in others (for instance, through aggression, coercion, and withholding resources). *Prestige*, in contrast, refers to approaches to achieving high social rank that are characterized by gaining respect from others for one's skills and competence, particularly when these help achieve collective goals (Henrich and Gil-White 2001). Prestige is, perhaps, the social hierarchical dimension most closely tied to status, and some researchers have explicitly described the two constructs as equivalent (Cheng et al. 2013); we more fully consider this issue later in this chapter. Finally, *influence* refers to the ability to shape and alter others' views and/or behavior. As we discuss in more detail later in the chapter, we subscribe to the view that it is critical to recognize influence as a downstream consequence of any of these social hierarchy-related constructs. Indeed, individuals may have influence, but that does not tell us whether they are seen

as dominant, prestigious, or of high SES. They may also have the potential to wield influence but choose not to do so; this restraint does not diminish their dominance, prestige or SES (and, indeed, may help maintain it; Magee and Galinsky 2008). Moreover, sources of social influence are not restricted solely to hierarchy-related forces. For instance, the mere presence of another individual may lead them to have influence on a target without any regard to hierarchy (Zajonc 1965).

Note that these have not always been the accepted definitions of these constructs and that many prior studies on "status" have actually been—according to these definitions—about one or another of these alternate dimensions of social hierarchy. For instance, some prior studies about "status" have actually either manipulated or measured what we refer to above as power, with much of that work describing the concepts of status and power interchangeably (e.g., Brewer and Brown 1998). Other studies about "status" have actually manipulated or measured what we refer to as influence. Thus, it is important to examine the details of prior work—the precise measures used, manipulations implemented, etc.—to figure out which construct is the true focus of the work. We cannot emphasize this point enough. Prior work that is ostensibly about status, but that manipulates status as resource control or hierarchical position, may well find different results than studies that manipulate status as esteem or social regard. This, in turn, can make it seem as if status does not have reliable effects on outcome variables when, in fact, it is the inconsistency in the operationalization of status that drives those differences.

The importance of definitions and conceptual precision is reflected in a question/critique that we often encounter when discussing status as a distinct social hierarchical dimension. In particular, it is often noted that the distinction between status and power is already addressed by French and Raven's (1959) taxonomy of the bases of power. In particular, as described in that taxonomy, *referent power* seems to map on to our conceptualization of status. This suggests that status is simply a basis for power—that it is not a distinct hierarchical dimension but, rather, a pathway to being highly ranked on the power dimension. Yet, if we use the definitions provided above to reflect on French and Raven's seminal theorizing, we have a new lens through which we can understand this foundational work. In particular, the French and Raven theorizing is best described as analyzing the bases of *potential for influence*, not power per se. Their work equates the two constructs. Yet, like others, we feel that it is critical to unpack influence and to describe it as an outcome of several possible social hierarchical dimensions. When we apply our perspective to French and Raven's theorizing about the bases of *influence*, it becomes clear that their work actually represents one of the earliest efforts to stress the importance of distinguishing between social hierarchical dimensions. Indeed, the various bases they outline may be construed as presenting a rather granular understanding of the various social hierarchical dimensions we describe above. For instance, our definition of power as resource control is reflected in a more fine-grained manner by French and Raven's (1959) articulation of coercive, reward, and expert bases. We regard this early work as quite consistent with our efforts to distinguish between status and power, though confusion around definitions and terminology may superficially obscure that consistency.

One common argument—even among those who accept the distinct definitions of the dimensions of social hierarchy listed above—is that while distinctions can be drawn, those distinctions are not meaningful. According to this perspective, because covariation among these distinctions is very strong—e.g., status invariably leads to power, or vice-versa—the distinctions are not worth making. In other words, status and power are so tightly coupled that distinguishing them is an esoteric academic task, not an exercise that will shed light on real-world issues or problems. We firmly disagree with this perspective. First, as already discussed, if this same logic were applied to other research areas, critical insights would have been missed. This is a primary lesson from the history of procedural justice research. The legitimacy and insights of these areas would have been undermined by assuming that covariation is absolute and tantamount to an inability to disentangle two discrete concepts.

Second, when it comes to the various dimensions of social hierarchy, the strength of the covariation should not be overstated. The dimensions are distinct, and there are many cases of "off-diagonals"—e.g., individuals who wield power (or are of high SES) but have little status or individuals who have great status but little power (or are of low SES). Most people can all too easily think of supervisors or group authorities who hold tremendous resource control but who are not highly regarded by their subordinates and others with whom they interact. This same tension between possessing power in the absence of status is often seen in certain roles, such as the oft-noted Department of Motor Vehicle (DMV) employees and airport security (TSA) agents (e.g., Fast et al. 2012). Conversely, highly regarded supervisors or group authorities may have a very limited budget and a small group of subordinates under their supervision and control.

Armed with these definitions of the various dimensions of social hierarchy—as well as an understanding of the importance of distinguishing among them—we will consider empirical evidence that supports these distinctions. Our primary focus will be on empirical work that distinguishes between status and power. Given the predominance of work on the psychology of power, this is a particularly important distinction to draw in arguing for distinct consideration of status. Moreover, power is the dimension with which status is most often conflated. The empirical work we will discuss focuses on showing that status and power exert different effects on cognition and behavior. We will also briefly consider the distinction between dominance and prestige, an issue we more fully explore in the following section, where we posit a model for organizing all these various dimensions of hierarchy. Throughout, it is important to note that our interest is in examining the effects of one's *sense of* one's own status and/or power (or other basis of social hierarchy). Therefore, our attention is not on structural or objective dimensions of social hierarchy, but, rather, on individuals' awareness and perception of where they stand on these dimensions. This is, of course, consistent with the focus of this entire volume on the *psychological* experience of status.

Comparing Status versus Power

Although status and power are often confused with one another, individuals derive, experience, and utilize them differently. This insight is not new (see Emerson 1962; Fiske 2010; Goldhamer and Shils 1939; Hall et al. 2005; Henrich and Gil-White 2001; Ridgeway 2001; Ridgeway and Walker 1995; Sachdev and Bourhis 1985). However, empirical work testing this insight is generally lacking, which may explain why consensus about their distinction remains elusive.

One critical difference between status and power is that status, relative to power, is more reliant on the judgments and evaluations of others. It relies more on a conferral process, as discussed earlier. Therefore, power is relatively more of a property of the actor (i.e., the power-holder), while status is relatively more of a property of co-actors and observers (Fragale et al. 2011; Magee and Galinsky 2008). That is not to say that power is wholly independent of co-actors and observers; if others do not agree that a target has power, they will not engage in acts—such as deference—that can be important in reinforcing the target's power position. Moreover, others may challenge the value of the resource that the power-holder target controls, again giving co-actors and observers a significant role even in power dynamics. Yet, these are relatively more distal influences on power conferral since they are indirect. That is, they rely on cases where lack of deference will actually diminish one's power position, or where alternate resources enable challenges to the value of a power-holder's resources. Status conferral, in contrast, involves a more direct role for co-actors and observers. Moreover, while there are means by which power-holders can compensate for lack of power conferral from their interaction partners, there are no such substitutes when it comes to status. If interaction partners and observers do not bestow status on a target, then that target does not have status. This differentiation is reflected in power and status dynamics among national leaders: Countries' presidents can build and maintain power through the infusion of financial or military support from foreign countries, but they must rely on the views of their own people in order to build and maintain high status among their constituents.

We argue that this critical difference between status and power can be the source of important differences in how they affect those possessing each of these bases of social hierarchy. For instance, since status relies on others, concerns about maintaining one's status will orient status-holders outward, as they will be focused on monitoring where they stand vis-à-vis the status-conferral process. That is, status concerns may orient individuals to focus on their interaction partners and other individuals in their environment (Blader and Chen 2012; Blader et al. 2013; Flynn et al. 2006). This would be due to a concern over the status-conferral process (Blau 1964; Emerson 1962; Homans 1961; Magee and Galinsky 2008; Ridgeway and Erickson 2000) and, in particular, the conferral of respect and esteem (Blau 1964; Fragale et al. 2011; Henrich and Gil-White 2001; Van Vugt et al. 2008). This concern is particularly well founded since findings from a variety of research streams suggest that high status and, more generally, highly prominent parties may receive more atten-

tion and scrutiny from those with less status or prominence (e.g., Anderson and Shirako 2008; Graffin et al. 2013). As such, high-status parties (who presumably wish to maintain their high-status position) will not only be vigilant about monitoring status-conferral processes but will also be particularly vigilant about maintaining social relations in a manner that prompts continued respect and esteem from others. That is, they will strive to fulfill others' expectations that high-status parties show consideration and act in a manner that warrants their high-status position (Blader and Chen 2012; Ridgeway 1978, 1982).

Note that this is consistent with arguments from several streams of status research. For instance, consider that feelings of respect and pride—feelings that accompany holding a higher-status position and that are "highly socially defined" (and thus depend on others)—can lead to increased attention to and understanding of others. This is because increased attention to others can help perpetuate others' admiration and conferral of status to the high-status individual (Cheng et al. 2010: Henrich and Gil-White 2001). Critical, however, is the point that status-maintenance concerns prompt high-status parties not only to be oriented and attentive toward social targets but also to act in ways that these targets find respectable and commendable. Consider, for example, findings that those who achieve higher status in a group actually escalate their generosity to the group once they achieve a higher-ranked position (Willer 2009). Rather than selfishly reaping the benefits that come with their elevated position and thus reducing their contributions, they instead increase their contributions. While this increase may result from an enhanced sense of connectedness to the group after achieving a high-status position, it may also be due to a concern with maintaining one's position since this heightened generosity may help ensure that the high-status individual continues to be respected and held in high esteem.

This description of the effects of status stands in stark contrast to the effects of power, which liberates people from social and normative pressures and enables them to shift their focus inward, toward their own goals and dispositions (Galinsky et al. 2008; Guinote 2007; Keltner et al. 2003). Indeed, power can prompt an egocentric orientation to social encounters (Fiske 2010; Galinsky et al. 2006; Lee and Tiedens 2001). As such, power makes people less attentive to and concerned about others (Galinsky et al. 2006) and thus may also make them less concerned about others' impressions of them.

Several recent studies have tested this fundamental argument, exploring whether status and power have differential effects on a) attentiveness toward others and b) behavior toward others that reflects a concern for how others will view the status- versus the power-holder. We consider these lines of research below, focusing on the emerging story they tell about the dynamics of status and power.

Status, Power, and Perspective Taking In one recent line of work, Blader et al. (2013) compared the effects of status and power on perspective taking. Perspective taking—the ability to take others' vantage point and to understand their feelings, concerns, and perceptions—is a rather direct index of attentiveness toward others. Thus, these studies provide an ideal test of the argument that status and power prompt differential attentiveness toward others. Moreover, prior research has

demonstrated that power is negatively associated with perspective taking (Galinsky et al. 2006; Lammers et al. 2008a; Tjosvold and Sagaria 1978). This is because, as described earlier, increased power creates a heightened egocentric focus (cf. Overbeck and Park 2001, 2006). This diminishes the likelihood that high-power parties will adopt others' perspectives.

Blader et al. (2013) sought to examine whether status has the opposite effect of power on perspective taking and, in particular, whether status actually increases perspective taking. Their reasoning was based on the argument outlined above, which indicates that status will prompt an outward focus (i.e., a focus on others) in contrast to power's tendency to prompt inward focus (i.e., a focus on the self). In particular, they argued that status-holders try to cultivate social relations in a manner that prompts continued respect and esteem from others. This relational focus requires that status-holders focus on others and that they fulfill others' expectations that high-status parties show consideration and act in a manner consistent with one holding high status (Blader and Chen 2012; Ridgeway 1978, 1982; Willer 2009). Perspective taking is inherent in this process since it facilitates understanding others, monitoring others' reactions, and anticipating what others will regard as respectable. Note how this stands in contrast to high-power parties' egocentric focus. Moreover, it also contrasts with those possessing a low-status position, who may be relatively less concerned about social relations in general or who may be relatively more focused on efforts to achieve status. Both of these characteristics of low-status parties would prompt them to have a relatively reduced focus on perspective taking (as compared with their high-status counterparts). This latter point warrants further explanation: Prior research has emphasized that low-status parties striving to attain status will be relatively more focused on demonstrating competence and value to the collective (Anderson and Kilduff 2009; Magee and Galinsky 2008), rather than on understanding and showing consideration for others. As such, high-status parties should be more likely to perspective-take as compared to both their high-power and their low-status counterparts.

The results across four studies provided strong support for these predictions about the effects of status versus power on perspective taking. One of their studies that provides a clear illustration of these effects was based on prior perspective-taking research (Todd et al. 2011; Tversky and Hard 2009), in which participants were provided a photograph of a scene that included an individual seated at a table, with a book located off to one side of the table. The key dependent variable in this study asked participants to report which side of the table the book is on. This was an index of perspective taking since participants spontaneously adopting the perspective of the individual in the photograph would describe the position of the object from that individual's perspective (e.g., "to the person's left"). In contrast, those who described the position of the object from their own perspective (e.g., "to my right") were not adopting the target individual's perspective.

Participants were randomly placed into one of five experimental conditions (high-status, high-power, low-status, low-power, and control). These conditions were manipulated using the recall paradigm that has been prevalent in recent power research (e.g., Galinsky et al. 2003, 2006). This paradigm cued participants to re-

call a prior incident in which they had high (or low) power or status and, in doing so, provided a way to instill a low- versus high-power or a low- versus high-status mindset. The results confirmed the preceding predictions about the differential effects of status and power on perspective taking. Replicating prior work (Galinsky et al. 2006), participants in the high-power condition were less likely than their counterparts in the control or low-power conditions to perspective take. More importantly, the findings indicated that participants in the high-status condition were more likely to perspective take than their counterparts in the control or low-status conditions. In other words, high levels of status and power had opposite effects from one another on perspective taking (as compared to the control condition and to low levels of each of these dimensions of social hierarchy).

These findings were corroborated by several other studies that detected the same pattern of effects of status and power on perspective taking. For instance, in another study in Blader et al. (2013), the same pattern was found for a different class of perspective taking—namely, affective perspective taking (often conceptualized as emotion recognition (Denham 1986; Galinsky et al. 2006; Gonzaga et al. 2008; Moeller et al. 2011)). In this case, the researchers found that high status increased accuracy in reading others' emotions, while high power had the precisely opposite effect. Overall, this set of studies provide initial support for the argument that the dynamics related to possessing high status spur a distinct psychology from those related to possessing high power, insofar as they appear to prompt differential attentiveness toward others.

Status, Power, and Justice Another recent series of studies (Blader and Chen 2012) tested an argument related to that tested in Blader et al. (2013). In particular, Blader and Chen (2012) examined the differential effects of status and power on justice enacted toward others. This represents an extension of the perspective- taking findings just described since the enactment of justice toward others reflects not only perspective taking but also a concern for others and the impressions that one creates with others. That is, while perspective taking is a necessary part of the mechanism that underlies justice enactment (since justice enactment requires an understanding of the justice recipient's perspective), justice also involves a more general concern toward the other party and relations with the other party. It also represents a more behavioral outcome than perspective taking, enabling a more direct examination of the impact that status and power differences may have on social relations.

Based on the same reasoning outlined above for how status-conferral processes prompt attentiveness toward others and a concern for how one is viewed by others, Blader and Chen (2012) tested whether possession of a high-status position was associated with greater justice enacted in an interpersonal interaction. Moreover, they reasoned that power would have the opposite effects on justice enactment and thus that power would be negatively related to justice enactment. This is because power-holders are characterized by decreased attention toward others, less individuation, and less concern for others and for how others view them (Lammers et al. 2008b), all of which would diminish the likelihood of treating others fairly. These predictions about the opposite effects of status and power on justice enactment were tested

in five experimental studies, covering a wide range of situations, forms of justice, and operationalizations of status and power.

Blader and Chen's (2012) key findings about the differential effects of power and status on justice are exemplified in study 3 of their paper. That study had participants role-play a leader who was charged with the task of laying off one of their subordinates via a written memo. Participants received role descriptions that included the status and power manipulations (i.e., status: "you are one of the most respected individuals in the company"; power: "you are personally given control over a great deal of the organization's resources"; or neither—i.e., the control condition). While enacting their roles, participants wrote their layoff memos, which were subsequently coded by independent raters for the procedural justice of the memo. Moreover, participants completed measures indicating a) their concern about fairness with regard to the memos and b) their general degree of attentiveness to the target.

The results indicated strong support for differentiating status and power. Layoff memos written by those in the status condition were rated as significantly fairer than those written by participants in the control or power conditions; moreover, those in the power condition were rated as significantly less fair than those in the control condition. In addition, the same pattern of findings emerged with regard to participants' self-reported focus on fairness and their general attentiveness to the target. Thus, both self-reported and behavioral indices demonstrated that high status made participants more concerned about the (fictitious) target affected by the layoff, while power had the opposite effect on concern about the target.

Blader and Chen (2012) adopted a somewhat different approach in their study 5, which orthogonally crossed power and status in a 2 (power: low, high) × 2 (status: low, high) experimental design. This method enabled an examination not just of high power versus high status, but also of their main and interactive effects on procedural justice enacted toward others. Examination of the interactive effects between status and power explicitly put the distinction between the two to the test, as it orthogonally crossed these dimensions of social hierarchy with one another—and, in the process, provided insight into the psychology associated with each.

This study utilized a negotiation role-playing paradigm, with status and power manipulated in the role materials provided to one negotiator. Procedural justice was rated by the other negotiator. As expected, there were positive main effects of status and negative main effects of power on procedural justice. This supports our general argument about the effect of status and power on other- and self-concern as reflected in justice enacted toward others. Moreover, there was an interaction between status and power, such that the positive effect of status did not emerge when power was high. This intriguing finding highlights the point that while status and power may well represent distinct constructs, it is important to consider their combined, interactive effects. We hasten to note, however, that the specific form that their interaction may take will be highly context-dependent. In highly competitive contexts in which economic norms and concerns dominate (such as the negotiation context of the study just described), power may "wash out" the effects of status. In contrast, in contexts in which reputational and relational considerations carry more importance, status may "wash out" the effects of power. The pattern of interactive effects

between status and power may likewise vary as a function of the bases of status and power, which are also highly variable across contexts.

One additional element of the studies presented in Blader and Chen (2012) warrants discussion. Several of the studies explored whether dispositional measures of other-orientation (e.g., relational interdependent self-construal; empathic concern) moderated the effects of power on justice. These studies reasoned that dispositional bases of other-orientation would attenuate the tendency for power to be negatively associated with fairness, arguing that those dispositions serve as bases for other-focus in much the same way that status serves as a situational basis for other-orientation. This perspective is consistent with the emerging recognition that high power sets the stage for individual differences to exert more influence, liberating power-holders from normative pressures and situational constraints and enabling the self and one's traits to exert more influence on their behavior (Chen et al. 2001; Fiske and Berdahl 2007; Galinsky et al. 2008; Schmid Mast et al. 2009). Findings throughout Blader and Chen (2012) corroborate this general pattern, demonstrating that dispositional other-orientation moderates the effect of power. Among those high in dispositional other-orientation, high power produces effects on justice that more closely resemble the effects found in the high-status conditions. The similarity in effects between dispositional bases of other-orientation and the high-status conditions supports our fundamental reasoning that status prompts other-orientation.

An intriguing series of studies differentiates status and power in the context of justice dynamics from a different angle. In particular, Rothman et al. (2013) examined how an individual's enactment of justice or injustice shapes third parties' inferences of that individual's status or power. That is, this work examined the reverse causal dynamic as compared with the pattern examined in Blader and Chen's (2012) research. Their findings indicate that perceived justice has opposite effects on perceptions of status and power. In particular, they found that fairness is positively associated with status but negatively associated with power. Unfairness enhances perceived power because it is seen as an indication that the actor has little relational concern for others, and this lack of concern is interpreted as meaning that the actor must possess high power. In contrast, fairness enhances perceived status because it is seen as showing that the actor has high relational concern for others, a characteristic associated with being held in high esteem. This work reinforces the differentiation of status and power and, moreover, confirms that the effects of status and power on justice found in Blader and Chen (2012) are consistent with perceivers' notions about how status, power, and justice interrelate.

Status, Power, and Demeaning Behaviors Related research has looked at the other side of the coin, examining antisocial behaviors rather than prosocial behaviors such as justice. In particular, Fast et al. (2012) examined the interactive effects of status and power on demeaning behaviors toward others. Participants in this study were asked to select interpersonal behaviors for their counterparts in the experiment to perform; the key focus was on the number of demeaning behaviors (e.g., barking like a dog) that participants selected. Results indicated—as might be expected based on the power literature—that high-power participants selected more demeaning tasks for their counterparts. However, this was only true for those high-power

participants that had low status. High-status/high-power participants did not show this propensity, suggesting that their high status may have oriented them to be more considerate toward their counterparts. Note that this interaction pattern is somewhat different from that found in Blader and Chen (2012), where high power negated rather than enabled the positive consequences of status. This may be due to differences in the nature of the dependent variables (prosocial versus antisocial behavior) or the experimental paradigms. A great deal of additional research is needed to fully understand the interactive effects of status and power.

Interestingly, Kuwabara (2013) used a very different paradigm but replicated the same general finding on a different type of negative behavior. This study examined, among other things, the extent of punishment (which is notably different from, but has some linkages to, demeaning behavior) meted out in public goods games as a function of both power and status. Consistent with the various studies discussed thus far, this study likewise found that power is positively associated with punishment toward others. However, this effect was attenuated by high status, an effect that the author attributed to the relational focus spurred by status and, in particular, the heightened sensitivity to how one is viewed by others. As such, the results of this study provide converging support for the interactive effects of status and power reported in Fast et al. (2012). More generally, the interactive effects found in both studies (and others) attests to the distinct natures of status and power.

Status, Power, and Social Judgment The studies we have cited thus far have distinguished status from power by examining their differential effects on those possessing them. Fragale et al. (2011) took a different approach, examining how status and power differentially impact the social judgments made by those evaluating status- and power-holders. In particular, they examined how a target's power and status impact observers' judgments of that target's dominance and warmth. They presented participants with depictions of target individuals that signaled either role-based or person-based power and status, and they asked participants to rate the targets on a variety of dominance and warmth-based traits. The results indicated that both power and status enhance perceived dominance. Power and status are, thus, not differentiable in terms of perceived dominance. However, participants indicated that power had a negative effect on warmth, but that this was attenuated when status was high. To the extent that warmth is a reflection of relational dynamics and, in particular, perceived other-orientation, these results are intriguing because they indicate that observers' reactions are quite consistent with the relational orientation taken by high-status individuals. That is, results discussed earlier show greater other-orientation among those possessing high status, while the Fragale et al. (2011) results (and, in some respects, the Rothman et al. (2013) results discussed above) show that observers regard those possessing high status as warmer and thus more other-oriented. As such, there is convergent evidence about the distinct effects of power and status in how individuals *actually* orient themselves toward others and in how they are *perceived* as orienting themselves toward others.

Differential Preferences for Status and Power Still another approach to distinguishing status and power is to examine differences in the factors that lead people to seek

one or the other. A key example of such work is that by Hays (2013), who considered the role of gender in shaping the extent to which power versus status is desired and sought. Hays (2013) hypothesized that given gender differences in the need for power, affiliation, independence, and interdependence, men will desire power more than women. In contrast, women will desire status more than men. Results strongly confirmed these predictions. In all three studies, men desired power more than women did, and women desired status more than men did. In two of three studies, men desired power more than status, and in all three studies, women desired status more than power.

Hays (2013) also explored a different issue with regard to preferences for status or power. Namely, he hypothesized about the role of legitimacy in preferences for power or status. He predicted that legitimacy would have a greater effect on the desirability of status (vs. power) since status is voluntarily conferred. His study 3, which tested these predictions regarding legitimacy, confirmed that legitimacy significantly influenced the desirability of having status, whereas it had no effect on the desirability of having power.

These findings provide additional support for the differences between power and status outlined above. Directly consistent with the argument that status leads to an outward orientation, Hays (2013) associated the preference for status with characteristics such as high need for affiliation and high interdependence, traits more commonly found among women (who corresponding with the results of Fragale et al. (2011), are typically seen as having more warmth). Likewise, also directly consistent with our reasoning that power differs from status insofar as it prompts more of an inward (i.e., self-focused) orientation, Hays (2013) found that preferences for power are associated with characteristically male traits of high need for power and high independence. These findings show that the power and status differences of our focus emerge not only when people find themselves in either a highly ranked power or status position but that they also emerge with regard to the desire for power or status. That is, power and status are differentially attractive to people as a function of people's dispositional inward vs. outward orientation. These findings serve as strong testament to our overall model of the fundamental differences between status and power—differences that we ascribe to the inherent outward orientation that is prompted by the status-conferral process.

Differential Effects of Status versus Power Hierarchies The final approach we consider for examining differences between status and power is research that shows differential effects of status and power hierarchies on competition (Hays and Bendersky 2013). This work takes the status-conferral process as its starting point and reasons that one consequence of the process is that status hierarchies are more mutable than power hierarchies. That is, since status is the result of an informal and continual conferral process, status hierarchies are more dynamic and more strongly impacted by the behaviors of those who are a part of the hierarchy. Hays and Bendersky (2013) took this logic and developed an intriguing and somewhat counterintuitive insight from it: that the enhanced mutability of status hierarchies means that people will act more competitively in the context of those hierarchies than they will in the context of power hierarchies. In other words, opportunities for upward

mobility are greater in status hierarchies than in power hierarchies, and this leads individuals to be more competitive as they try to achieve upward mobility.

Their work presented several empirical studies testing the differential effects of status vs. power hierarchies on competition and explored the mediating role of the hierarchy's perceived mutability. As a set, the studies provided compelling support for the authors' argument that status hierarchies are perceived as more mutable than power hierarchies and that this leads individuals to engage in competitive behaviors that are dysfunctional for the group's goals. Overall, this work provides a rather different perspective on the status vs. power distinction since it takes as its starting point the observation that status is more interdependent, yet it finds that this can prompt more pro-self/less pro-social consequences.

Prestige versus Dominance A dichotomy that is different from, but somewhat related to, the status vs. power dichotomy is the distinction between prestige and dominance. Henrich and Gil-White (2001) first articulated these concepts (defined above), describing them as two routes to attaining social status. Originally, this line of research used the term "status" to refer to what is essentially generalized influence or social rank. Subsequent work in this tradition clarified that point (Cheng et al. 2013), highlighting that what had originally been referred to as status was meant to refer to social rank and influence. Moreover, this subsequent work argued that prestige is conceptually analogous to the social psychological definition of status as respect and esteem (dominance, in contrast, is not seen as analogous to power; see Cheng et al.). Definitions and labels aside, this line of work highlights that prestige and dominance are two avenues to achieving high social rank. Since prestige is seen as equivalent to status, but dominance is not seen as equivalent to power, work that attempts to distinguish between prestige and dominance represents an interesting complement to the status vs. power research outlined above. Thus, we briefly consider some of the most recent work in this tradition, though we direct interested readers to Chap. 1 in this volume by Cheng and Tracy, which provides a more thorough treatment of the distinction between prestige and dominance.

The key insights of this work are reflected in two sets of studies that empirically differentiate prestige from dominance. In one of these sets of studies, Cheng et al. (2010) differentiate between prestige and dominance by considering their association with two distinct forms of pride. Hubristic pride refers to pride marked by feelings of arrogance and conceit, while authentic pride refers to pride marked by feelings of accomplishment, confidence, and success (Tracy and Robins 2004). Hubristic pride is highly antisocial, whereas authentic pride is socially valued. Thus, Cheng et al. reasoned that if dominance and prestige were, in fact, distinct dimensions of social hierarchy in the way that prior theorizing has predicted, then dominance should be associated with hubristic pride and prestige with authentic pride. That is, hubristic pride should serve as the impetus for dominance-like behaviors, while authentic pride should motivate prestige-like behaviors. Their results provided strong support for these predictions. Indeed, their study went well beyond an examination of these two forms of pride and demonstrated differences between dominance and prestige on a whole host of psychological traits, emotions, and abilities. Overall, the consistent message of this research is that prestige and dominance

represent dramatically different dimensions of social hierarchy—with prestige primarily associated with prosocial and socially-valued psychological traits and emotions, and dominance primarily associated with antisocial and socially-undesirable traits and emotions. Cheng et al. helped to differentiate between social hierarchy that is fear and power focused and social hierarchy is that prosocial and respect focused (with the latter form of social hierarchy closely matching our conceptualization of status).

In a more recent set of studies, Cheng et al. (2013) further built on the prestige versus dominance dichotomy and found additional evidence that they both represent distinct, yet viable, means to attaining influence and prominence. They did so by tracking the effects of dominance versus prestige strategies in both actual and observed groups. This work contributes to efforts to distinguish the dimensions of social hierarchy since it shows that prestige and dominance represent dramatically different and easily recognizable tactics for attaining high social rank (see also Halevy et al. 2012, who likewise found divergent antecedents of prestige and dominance). Prior research on prestige and dominance validates our argument that it is critical to differentiate the dimensions of social hierarchy and, moreover, that one cannot simply look to a single dimension of social hierarchy in order to understand where a given target stands on other dimensions. In other words, knowing a given individual's standing with regard to influence or prominence would not be informative about their standing on other dimensions, such as prestige and dominance (which map on to status and power, respectively).

Toward an Integrative Model of the Dimensions of Social Hierarchy

The foregoing review of work distinguishing between status and power demonstrates the emerging empirical support for—and confirms longstanding arguments in favor of—differentiating these two dimensions of social hierarchy. In addition, the related empirical work that distinguishes prestige from dominance also supports the overall argument that precision is important when it comes to the various dimensions on which actors in a given social context can be rank-ordered against one another. Those dimensions greatly differ from one another in terms of their antecedents, mechanisms, and consequences. As such, our understanding of social life demands an appreciation for the various dimensions along which social actors can attain high rank.

Yet, recognition of the various dimensions of social hierarchy should be the beginning, not the end, of researchers' efforts to gain a better understanding of hierarchy. It is not enough to simply advance the argument that it is important to distinguish among status, power, prestige, dominance, influence, and other dimensions on which social actors can be rank-ordered. While distinct, these dimensions are not wholly independent of one another, and thus we need an integrative framework for seeing how they relate to one another. How do all these related (and, unfortunately,

often confounded) dimensions fit together? Given the nascent stage of efforts to distinguish these dimensions, there is relatively little existing work and thus little guidance on this issue. In light of the importance of developing such a framework—and in recognition of the fact that there is little work on this issue to date—below we put forward a proposal for one such integrative framework. However, we fully recognize that our framework is highly tentative and that our primary goal is to stimulate thinking on the matter rather than to provide the final word.

Our proposed framework distinguishes among three different "categories" of the dimensions of social hierarchical rank: (a) antecedents of social rank; (b) dimensions of social rank; and (c) consequences of social rank. In other words, it advocates unpacking the various dimensions of social hierarchical differentiation according to their role or function, emphasizing three particular roles: antecedents, social rank itself, and consequences. Antecedents of social rank refer to those dimensions of social hierarchy that describe how or why a particular actor achieves high social rank in the first place. These antecedents can include characteristics of the actors themselves or types of behaviors that they may engage in. Regardless, antecedents refer to the foundation of a given social actor's social standing.

Consequences, on the other hand, capture downstream effects of one's social rank, such as one's influence or prominence. This leaves the middle category—dimensions of social standing, which are the hierarchical dimensions that account for the impact of antecedents of social rank on the downstream consequences of social rank. This middle category highlights the hierarchical dimensions that matter; the consequences explain why they matter, while the antecedents explain how they develop. Thus, we essentially propose thinking about the many bases of social hierarchical differentiation in terms of a mediation model, with distinct categories of antecedents, mediating processes/constructs, and consequences.

Antecedents of Social Rank Prior research and theorizing has noted many antecedent factors that result in people attaining high social rank. These factors include: (a) demonstrating value to the group (Anderson and Kilduff 2009; Willer 2009) (which includes *prestige* (Henrich and Gil-White 2001), as described in the previous section); (b) dominance and aggression (Buss and Duntley 2006; Henrich and Gil-White 2001); (c) status characteristics (Berger et al. 1972); (d) SES (Krauss et al. 2009); (e) emotion (Tiedens 2001); and (f) personality (Cheng et al. 2013). Each of these has been examined in prior research as a dimension on which social actors' standing is predicated. Moreover, several of these have also been described as dimensions of social hierarchy themselves. Consider, for instance, SES a dimension that arrays social actors according to their wealth. Rather than considering this hierarchical dimension (i.e., wealth) as equivalent to all others, we instead think it is valuable to recognize wealth as an antecedent that, in combination with other antecedents, shapes social rank.

Of course, several of these antecedents can be further deconstructed into more specific factors. Consider, for instance, demonstrating value to the group. There are multiple ways in which actors can demonstrate their value to the group (Anderson and Kilduff 2009)—i.e., there are multiple factors that determine where a given social actor ranks on this dimension. People can demonstrate their value to the group

by being highly motivated and helping fellow group members complete challenging group-relevant tasks. They can also demonstrate their value by having great competence in skills that are critical for the group's success, as per the *prestige* approaches to attaining high social rank (Henrich and Gil-White 2001). Demonstrating commitment to the group is yet another factor that will shape one's perceived value to the group. Moreover, these various factors may not combine in an additive manner. For example, competence and helping may well combine interactively in determining one's overall perceived value to the group. So the antecedents themselves may represent quite complex constructs.

Some antecedents have been described as dimensions of social hierarchy (e.g., prestige, dominance, SES), while others have been more explicitly described as antecedents of social standing (e.g., emotions, status characteristics, commitment to the group). Regardless, the factor common to all of the antecedents listed above (and others that have yet to be investigated) is that they shape individuals' social rank on some valued dimension. They are characteristics of the individual or behavioral displays by the individual that, when perceived by others, impact how those observers evaluate and rank the individual on dimensions of social rank.

It is worth briefly considering this last point and how it relates to the *prestige* construct described above. Cheng et al. (2013) noted that prestige's focus on respect makes it closely related to the definition of status that we adopt above, and, in fact, Cheng et al. indicate that they regard prestige and status as synonymous. We take a slightly different approach to this issue and question whether prestige and status are best defined as synonymous constructs. Cheng et al. defined prestige as referring to a suite of factors (i.e., associated emotions, cognitions, and behaviors) that a social actor may use to cultivate respect and admiration from others (whereas dominance refers to a suite of factors that a social actor may use to cultivate fear in others). We distinguish such tactics from the subjective evaluations that they actually prompt in others. In this way, we distinguish prestige from status. That is, we regard prestige as an antecedent in our proposed model, since prestige (as conceptualized in Cheng et al. and in Henrich and Gil-White 2001) refers to a range of approaches and strategies that can ultimately lead one to achieve status through status-conferral processes. Based on the same reasoning, dominance is likewise an antecedent. A key implication of our approach is that both prestige and dominance can, in theory, be related to either status or power evaluations. The extent to which these two distinct approaches impact status or power will depend on the group's culture, norms, and values. That is, context will play a large part in determining the impact of any given antecedent on any given dimension of social rank. More generally, any of the antecedents of hierarchical differentiation that we outlined above can shape either of the dimensions of social rank (e.g., in some contexts dominance can prompt status, and in others prestige can prompt power).

Dimensions of Social Rank The dimensions of social rank refer to dimensions along which social actors are ranked that explain the effect of the antecedent factors just described on downstream consequences. In other words, they describe the mechanism by which antecedent factors such as value to the group, dominance, emotions such as anger, and personality characteristics such as extraversion have downstream

consequences for a given individual. This is the category in which we locate *status* and *power*, which we reviewed extensively above. Status and power both describe critical dimensions of social rank, but do not describe the antecedent factors that led to them or the downstream consequences of holding them.

Each of the antecedent factors we described above can impact a given actor's status and/or power. In some cases, the effect of a given antecedent may be the same for status and power (e.g., conscientiousness may have a positive association with both, whereas membership in a stigmatized group may be negatively associated with both). Other antecedents may have opposite effects on status and power (e.g., anger may enhance power but diminish status; subservient helping may enhance status but diminish power). And still other antecedents may impact status or power but have no effect on the other dimension of social standing (e.g., commitment to the group may impact status while having no effect on power).

Consequences of Social Rank Distinct from the antecedents and dimensions of social rank are its downstream consequences. These refer to the effects that one's social rank can have on any of a variety of outcomes. Such outcomes can include individuals' influence on other group members; their prominence within a group; their leadership in the group; and the extent to which other group members defer to them, a sub-class of influence.

Prior research has not consistently conceptualized these as outcomes of social rank, but, rather, has often considered them dimensions of social rank on par with status, power, and other dimensions we have categorized as antecedents. As an example, influence has often been (and continues to be) rolled into definitions and operationalizations of power and status. Like others (Fiske and Berdahl 2007; Magee and Galinsky 2008), we regard influence as a downstream outcome of status and power, i.e. as a consequence of status and power but not an element inherent in the constructs themselves. Differentiating the consequences of social rank is essential to efforts to distinguish among the various dimensions of social hierarchy. For example, if influence is embedded in conceptualizations of status and power, then any evidence of influence cannot be differentiated from its basis. As such, relying on influence as an index for people's status makes it impossible to differentiate their status from their power.

Consequences of social rank include many of the outcome variables in the studies described earlier, in the section on differentiating power and status. For instance, justice enacted toward others, perspective taking, demeaning behaviors, and social judgments are all outcomes that we described earlier as being differentially shaped by power and status. Our approach highlights the mechanism by which these outcomes are linked to the antecedents of social rank and thus suggests intriguing avenues for future research. Consider, perhaps, that there is a negative relationship between dominance and justice, or between anger and perspective taking. Our approach suggests that these effects may be (at least partially) mediated by power. Or, perhaps, perceived warmth is positively related to helping, or extraversion is positively related to justice enacted toward others. These relationships may be (at least partially) mediated by status. There are extraordinary possibilities that emerge from drawing the distinctions made in our proposed framework, possibilities that

present the opportunity to enrich our understanding of the role that social hierarchy plays in explaining a wide variety of phenomena.

What is the Value of such a Framework? The underlying premise of our proposed framework is quite straightforward—we simply argue for differentiating antecedents and consequences of social rank from the critical dimensions of social rank. We have noted that this simple premise opens up a wide range of possibilities for studying the mediating effects of status and power on group phenomena. Moreover, the premise of our framework directs greater attention to the strategies by which social actors can gain status or power (by bringing greater attention to the antecedent factors), as well as to the consequences of doing so. Categorizing the various dimensions of social hierarchy in terms of this causal model can go a long way in advancing the study of social hierarchy, as compared with maintaining a model in which everything is grouped into a single bucket of social hierarchical constructs with little to differentiate them. Moreover, efforts to distinguish between status and power are advanced by focusing on their respective antecedents and consequences. Doing so makes clear that different patterns of relationships exist between (a) the antecedents to social rank and status versus power and (b) status versus power and the consequences of social rank.

Our framework also highlights a critical difference between research on status and research on power. Power research, to date, has focused primarily on studying its consequences for the power-holder. For example, prior research has emphasized that power enhances approach tendencies (Keltner et al. 2003); increases social distance (Magee and Smith 2013); elevates positive affect (Anderson and Berdahl 2002); and leads to biased perception, selective framing, or inattention to details (Guinote 2007). In contrast, status research has focused mainly on studying its antecedents, such as competence, commitment, generosity, and demographics (i.e., the variables discussed in our framework as antecedents). Relatively less power research has examined its antecedents. Moreover, to the extent that status research has examined consequences, they have been consequences that emerge among those interacting with status-holders rather than psychological consequences for the status-holders themselves. For instance, prior work has explored consequences of high status such as receiving support (Van der Vegt et al. 2006) or receiving extra credit for performance and successes (Fan and Gruenfeld 1998; Poldony 2005), both of which are bestowed on high-status individuals by their lower-status counterparts. Due to this different focus in the power and status literatures, we know relatively less about the factors that lead to resource control and thus power; and we know relatively less about the intra-psychic consequences that follow for an individual who holds a position of respect and prestige. Yet, these are critical issues for developing a comprehensive understanding of social hierarchy. Our framework highlights these gaps both in prior research and in our understanding of the full range of dynamics related to status and power.

Finally, we wish to highlight that these dynamics become more complicated when the interrelationship between power and status is considered. Indeed, respect (i.e., status) can lead to resource control, and resource control (i.e., power) can lead to status. In other words, status and power are themselves antecedents of so-

cial rank. Do the consequences that follow from power shift when one's power is gained through status as opposed to through dominance? Do the consequences that follow from status shift when one's status is gained through resource control rather than through demonstrated value to the group? Moreover, by what mechanism do status and power lead to one another? For example, does the effect of status on deference enable status-holders to enact plans that result in resource acquisition for themselves? This is just one of a myriad of reciprocal relationships that may exist between status and power. While analyzing these relationships is beyond the scope of our effort to simply distinguish these constructs, it is certainly important for future research to keep these complex relations in mind. Our proposed framework offers a language and a structure for doing that.

Conclusion

Our goal in this chapter has been to bring greater attention to the various dimensions of social hierarchy and, in particular, to raise awareness about the importance of differentiating among these dimensions. As we noted in the beginning of the chapter, lessons from other research areas provide testament to the importance of such differentiation. Yet, to date, remarkably little work has focused on empirically differentiating the various dimensions of social hierarchy. The development of research on social hierarchy stands to benefit from the conceptual clarity that can come from differentiating these dimensions. Moreover, the framework we propose for categorizing the dimensions of social hierarchy highlights an incredibly fruitful range of research questions and projects. But on a more general level, our very understanding of social life stands to be enhanced by a deeper appreciation of the variety and types of dimensions of social hierarchy. Indeed, social hierarchy is a truly fundamental element of all contexts in which multiple social actors gather. Thus, understanding those contexts demands a deeper understanding not only of the psychology of social status but also of the psychology of all dimensions of social hierarchy.

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Part II
Who Leads? Psychological Underpinnings of Status Attainment

Chapter 5
Personality and Status Attainment:
A Micropolitics Perspective

Cameron Anderson and Jon Cowan

Status hierarchies, a ubiquitous and fundamental feature of social life, have profound implications for individual welfare. Individuals with higher status are accorded more respect and influence, enjoy more influence and control in their social environment, more freedom and autonomy in determining their own behavior, higher subjective well-being, better health, and longer lifespans (for a review, see Anderson et al. 2013). Individuals with lower status, in contrast, are given less respect and social attention, have less control, face more constraints on their behavior, experience lower self-esteem and happiness, and suffer more from mental and physical illness.

Given the importance of status, it is critical to understand how status differences develop. That is, why are some people accorded higher status whereas others are relegated to the bottom of the social order? Are there certain personal characteristics that make some people more likely to rise in status and others fall? Research on these questions has traditionally focused on demographic characteristics such as gender, ethnicity, and age (e.g., Berger et al. 1972). More recently, however, scholars have begun to examine the role of personality. This recent work has shown that status-organizing processes are multifaceted and complex, and that diverse kinds of individual differences play an important role in determining status hierarchies in groups and face-to-face interactions.

The current chapter has two primary aims. *First*, we review studies of the effects of personality on status attainment. We specifically focus our attention on the personality dimensions that have been most consistently examined in studies of status—namely, the Big Five personality dimensions, trait dominance, self-monitoring, and narcissism. *Second*, we seek to help explain the findings that emerge from the literature, or why some personality traits facilitate status attainment whereas others do not. To do so we use a recently proposed *Micropolitics* theory of status-organizing processes (Anderson and Kennedy 2012). As we describe in the following section, the Micropolitics theory argues that an individual's status is a

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product of both a group's judgments of which individuals deserve higher status, and of the individual's motivation and ability to seek higher status.

At the core of status is the respect and admiration individuals achieve in the eyes of others (Anderson et al. 2001; Magee and Galinsky 2008). Individuals with higher status tend to be more socially prominent and receive more attention from others (Chance 1967), and to be given more influence and control (Willer 2009).

Micropolitics Theory of Status

The Role of the Group in Determining Status

In line with functionalist views of status, the Micropolitics theory proposes that status is ultimately a function of the group's collective judgments and decisions about which individuals deserve social status (Bales et al. 1951; Berger et al. 1972; Eibl-Eibesfeldt 1989; Emerson 1962; Goldhamer and Shils 1939). That is, groups develop an implicit consensus as to which individual characteristics are valuable to the collective, and allocate high- and low-status positions according to whether the individual possesses relatively more of those characteristics. Individuals who possess characteristics that allow them to make important contributions to the group are afforded high-status positions, whereas individuals who possess fewer characteristics that would provide social value are allocated low-status positions.

The characteristics viewed as socially valuable can vary from group to group (Anderson et al. 2008b); but in general, two kinds of attributes are important. *First*, individuals must appear to possess *competencies* central to the group's primary goals and challenges (Driskell and Mullen 1990; Ridgeway 1987). For example, superior athletic abilities will help an individual attain higher status on a soccer team because such abilities help the team win games; superior leadership skills will help an individual attain higher status on a work project team because such skills will help him or her manage the team's process and coordinate members' activities.

Second, individuals must also appear to be *collectively minded*, or willing to use their competences to benefit others and contribute to the group's success as a whole (Ridgeway 1982; Willer 2009). As Blau (1964) explained, "To earn the deference as well as the respect of others, it is not enough for an individual to impress them with his outstanding qualities; he must use these abilities for their benefit" (p. 162). Indeed, accumulating evidence suggests individuals who appear collectively minded are given higher status than those who seem solely self-interested (Griskevicius et al. 2010; Hardy and Van Vugt 2006; Ridgeway 1982; Willer 2009).

It is important to note that status is given to individuals who are *perceived* to provide value to the group—not necessarily those who actually provide social value. For example, much research has shown that groups can mistakenly perceive members with certain demographic characteristics as more competent and, as a result, accord those individuals higher status, even when those members are actually

no more competent than others (for a review, see Berger et al. 1980). In short, perceptions of social value, not actual value, drive status conferral.

The Role of Individual Pursuit of Status

While groups might ultimately decide who is afforded high or low status, the Micropolitics theory also argues that individuals proactively pursue higher status. Individuals are not mere passive recipients of status, but instead behave in ways to increase or maintain their current level of status. Specifically, because status is afforded to individuals who are perceived to provide value, individuals jockey for status by striving to enhance their value to the group in the eyes of others—for instance by highlighting their competencies or their collective-mindedness to others, or by establishing important relationships and alliances. For example, individuals work to improve their abilities in socially valuable domains (Sutton and Hargadon 1996), engage in self-presentational strategies to portray their abilities in the best possible light (see Leary et al. in this volume, Chap. 8), or make more public contributions to the collective to convey their generosity and commitment to the group's success (e.g., Hardy and Van Vugt 2006).

In this way, status-organizing processes in social groups can be seen as a "micro" analogue of electoral politics. Just as in political elections, group members are chosen by the collective to occupy high status, influential positions. Individual members, just like political candidates, are selected according to whether they exhibit the right characteristics—competencies such as decision-making skills, leadership abilities, etc.—as well as whether they exhibit a commitment to others' welfare. Further, individual group members, just like political candidates, "win" high-status positions if they are more skilled at enhancing their general reputation of providing social value (regardless of whether they actually provide social value).

In many ways, the Micropolitics theory of status builds from research on self-presentation (see Leary et al., in this volume, Chap. 8). Similar to self-presentational accounts, the Micropolitics theory argues that people pursue higher status in part by managing their impression and social image. However, the Micropolitics theory also goes a bit further in incorporating behaviors unrelated to self-presentation, such as the development of friendships and alliances throughout a social network and the derogation of status competitors that diminishes their value in the eyes of others.

The Micropolitics theory also avoids the controversy surrounding dominance theories of rank. That is, some theorists have proposed that individuals can attain higher rank in groups through a "dominance" path, which involves coercing others to defer based on intimidation and fear (e.g., Cheng and Tracy, this volume, Chap. 1; Lee and Ofshe 1981; Mazur 1985). Although this account has received empirical support (Cheng et al. 2013, 2010), several researchers have raised questions regarding whether dominance promotes influence solely by virtue of fear induction (see commentaries following Lee and Ofshe 1981; also Anderson and Kilduff 2009; Ridgeway 1987; Ridgeway and Diekema 1989). The Micropolitics theory does not

propose that individuals pursue higher status through coercion and inducing fear in others alone; rather, it proposes that individuals pursue higher status by conveying to others that they provide social value.

The Role of Personality in Status Attainment

Through this Micropolitics lens, personality traits can contribute to status attainment for a number of reasons. *First*, personality traits might involve skills or abilities that are important to the group's success. Individuals with particular traits might tend to possess superior social and leadership skills, for example, and thus be more likely to attain higher status. *Second*, personality traits might correlate with a stronger desire to pursue status. Prior research has shown that individuals who are more motivated to attain higher status are in fact more likely to attain it, suggesting they engage in a variety of "micropolitical" behaviors that help them ascend the social order (Anderson and Kilduff 2009). *Third*, personality traits might correlate with the ability to signal one's value to the group more effectively. For example, some traits might allow people to engage in the right self-presentational strategies or to draw more attention to their important competences. It is important to note that these behaviors are not necessarily consciously enacted (e.g., Schlenker 2012). For example, individuals might draw attention to their expertise in a given area without any conscious intent to attain higher status among peers.

Research Review

The current review focuses on the personality traits that have been most consistently studied as predictors of status. This includes the Big Five personality dimensions—extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. It also includes trait dominance, which is viewed as part of the broader extraversion factor in the Big Five framework; but that has been examined separately from extraversion in a multitude of studies and therefore warrants its own discussion. Finally, the review includes studies of self-monitoring and narcissism, two personality traits that have been increasingly linked to status in recent years.

The review includes studies of ad hoc groups—that is, individuals experimentally assigned to groups that exist only for short periods of time and that work together on a specific task—as well as studies of more typical groups, or groups that exist for extended periods of time, in which members spend a good deal of time together, and have a wide range of interactions. It includes studies of status differences per se as well as studies of emergent leadership structures and of emergent differences in influence within groups. Status can be conceptually distinguished from constructs such as leadership and influence (Magee and Galinsky 2008), within the context of task groups the three constructs correlate so strongly as to be virtually

indistinguishable (e.g., Bales et al. 1951). Therefore, we felt it appropriate to include studies of emergent leadership and of differences in influence.

Extraversion

Summary of Findings Extraversion implies an "energetic approach to the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality" (John and Srivastava 1999, p. 121). An abundance of research has shown a strong and consistent relation between extraversion and status. Multiple reviews of the emergent leadership literature have shown that extraverts tend to emerge as leaders in groups more than introverts (Bass 2008; Judge et al. 2002; Mann 1959; Stogdill 1948). Recent research has continued to observe similar effects: Deuling et al. (2011) found that extraversion predicted peer-rated influence in project teams of psychology freshman. Colbert et al. (2012) found that self- and peer-rated extraversion predicted emergent leadership in teams comprised of undergraduate and Master of Business Administration (MBA) students. Bendersky and Shah (2013) similarly found that extraversion predicted status in the early stages of student project teams.

Moreover, the status benefits of extraversion extend beyond teams to larger groups. Anderson et al. (2001) found extraversion predicted peer-rated status in college fraternities, sororities, and dormitories. Indeed in the dormitories, extraversion measured at the beginning of the academic year predicted status attainment 9 months later. Similarly, Harms et al. (2007) also found that extraverts were rated by their peers in fraternities and sororities as having more influence. Anderson et al. (2008) found that extraversion predicted peer-rated influence in a consulting firm. Finally, Ames et al. (2012) found that MBA students higher in extraversion were rated by former coworkers as having more influence in their prior job.

Even longitudinal studies that assess the attainment of status over long periods of time have found similar results. George et al. (2011) found in sample of women who graduated from Mills College that extraversion measured at age 21 predicted status of job they attained at age 52. Judge and Kammeyer-Mueller (2012) also found that self- and peer-rated extraversion predicted participants' occupational prestige in a longitudinal study that spanned several decades.

Why Do Extraverts Attain Status? Building from the Micropolitics theory of status, there are several possible reasons why extraverts attain higher status so consistently. *First*, extraversion is associated with the actual possession of social and leadership skills that are useful in almost all group settings (Akert and Panter 1988; Riggio 1986). For example, extraverts are more verbally expressive (Ames et al. 2012) and tend to use a "transformational" leadership style (Judge and Bono 2000), which is highly effective in leading groups (Bass 2008).

Second, extraverts are often perceived by others as being highly task competent. For example, Paulhus and Morgan (1997) found individuals who were less shy (i.e., more extraverted) were perceived as more intelligent. In the aforementioned study

by Anderson et al. (2008), extraverts attained higher status in a consulting firm but not in an engineering department of a telecommunications firm, presumably because extraverts were viewed as more competent in the team-focused culture of the consulting firm, but not in the engineering department where individuals worked alone on technical problems.

Third, some evidence suggests extraverts desire status more strongly than introverts (Brunell et al. 2008; Judge and Kammeyer-Mueller 2012; Olson and Weber 2004). Consistent with this notion, extraverts tend to engage in more "micropolitical" behaviors. For example, they signal their value to the group by drawing attention to themselves and to their positive attributes, such as their skills and abilities (Kyl-Heku and Buss 1996), and their valued resources (Buss 1996). They also develop a wider set of relationships, which is particularly important in larger social groups where it is easy for individuals to get "lost in the crowd" (Anderson and Shirako 2008).

Of course, extraverts do not always attain higher status. For example, extraversion can of course be independent from competences important to the group; when this is the case, extraversion does not predict status (Anderson et al. 2008). Some work suggests extraverts who appear competent at first can be "found out" by peers over time as having unimpressive task abilities. For example, in the study by Paulhus and Morgan (1997), the link between extraversion and peer-perceived intelligence diminished over time as group members became more familiar with each other. Similarly, in Bendersky and Shah (2013), extraverts' status decreased in work teams over time because the team viewed their contributions as being less than what was expected of them initially.

Trait Dominance

Summary of Findings The personality trait dominance involves the tendency to behave in assertive, forceful, and self-assured ways (Buss and Craik 1980; Gough 1987; Wiggins 1979). It is important to note that trait dominance is distinct from the "dominance" construct articulated by Cheng, Tracy, and Henrich (e.g., Cheng et al. 2010; Cheng and Tracy, this volume, Chap. 1), which they define as entailing the induction of fear through intimidation and coercion to attain higher influence and rank in a social hierarchy. *First*, trait dominance is a personality trait, whereas Cheng and Tracy's dominance construct is an evolutionary strategy for attaining or maintaining influence. *Second*, trait dominance does not necessarily include inducing fear or intimidating others (Gough 1987), but instead centers on assertive and self-assured behavior.

Similar to extraversion, vast evidence links trait dominance to the attainment of status in groups. Large-scale reviews have shown that dominant individuals emerge as leaders more than timid or meek individuals (Bass 2008; Judge et al. 2002; Mann 1959; Stogdill 1948). One meta-analysis of 85 years of research found trait dominance to predict who emerges as the leader in groups more consistently than any

other individual difference dimension examined, including intelligence (Lord et al. 1986).

More recent evidence also provides similar results. Foti and Hauenstein (2007) found that in freshman corps of cadets in the military, trait dominance predicted emergent leadership in group tasks. Anderson and Kilduff (2009) found trait dominance to strongly predict emergent influence in task-focused groups. And these effects also extend beyond teams as well: Harms et al. (2007) found trait dominance to predict peer-rated influence and the attainment of leader positions in fraternities and sororities. Ames and Flynn (2007) found that peer-rated assertiveness predicted peer-rated leadership abilities. Interestingly, however, they also found a curvilinear relation: while being too low in assertiveness led to lower leadership ratings, so did being too high in assertiveness. Presumably, individuals too high in dominance provide less social value because they impose their own will on others too much.

Why Do Individuals Higher in Trait Dominance Attain Status? The personality trait dominance involves, almost by definition, a preference for higher-status positions (Gough 1987). Therefore, one reason why individuals higher in dominance tend to attain high status is that they are more likely to pursue it than others.

Yet trait dominance is also related to being perceived by others as more competent socially and technically, and therefore as contributing more value to the group. For example, Anderson and Kilduff (2009) found that individuals higher in trait dominance were viewed by other group members as more verbally skilled and more competent at the group task. Strikingly, this occurred even though dominant individuals were actually no more competent than others. For example, among teams working on math problems, dominant individuals did not have higher scores on standardized math tests, nor did they provide more accurate answers during the group task. Yet they were still perceived as more quantitatively skilled by teammates.

To examine how individuals higher in trait dominance conveyed superior competence even when they lacked it, Anderson and Kilduff (2009) examined videotape of the group sessions and analyzed each person's behavior. They discovered two things. *First*, individuals higher in trait dominance were more engaged in the group tasks, spoke more, and displayed more of a commitment to the group's success. *Second*, they exhibited more outward signals of competence, such as volunteering answers and providing problem-relevant information. Therefore, although dominant individuals were not actually any more competent than others in their group, they came across as more competent because they took initiative and conveyed confidence in their abilities.

Trait dominance not only leads individuals to be mistakenly perceived as more competent, it also allows the competences and talents that individuals do actually possess to be noticed by others. Because individuals' abilities are typically hidden from others, sometimes highly competent and talented individuals fail to be seen as such by others (e.g., Berger et al. 1972; Driskell and Mullen 1990; Lord 1985). Trait dominance increases the chances that an individual's abilities will shine through. For example, a meta-analysis by Judge et al. (2004) found that for more "directive"

individuals (who are more dominant), intelligence predicted emergent leadership, yet for less directive individuals, their intelligence had no impact on the leadership role they attained. These findings suggest that for more dominant individuals, their skills and abilities are more likely to become known by others. For individuals who are more timid and meek in contrast, their competence might remain hidden and undetected by the group.

Agreeableness

Summary of Findings The relationship between agreeableness and status presents a puzzle. Agreeableness involves altruism, trust, modesty, and a tender-minded concern for others (Graziano and Eisenberg 1997; Hampson et al. 1987). Therefore, theoretically one would expect agreeable individuals to attain higher status because they tend to be more collectively minded; they care more about others' welfare and are more selfless and generous with others (Graziano and Eisenberg 1997; Hampson et al. 1987), traits that should lead to status attainment (e.g., Blau 1964). However, the empirical evidence suggests agreeableness is typically unrelated or even negatively related to status attainment.

For example, agreeableness and traits related to agreeableness do not emerge as predictors of emergent leadership (for reviews, see Bass 2008; Judge et al. 2002; Mann 1959; Stogdill 1948). In fact, Judge et al. (2002) found that agreeableness was the only Big Five dimension that did not predict emergent leadership. Similarly, in the aforementioned study by Anderson et al. (2001), agreeableness did not predict status in college social-living groups of any kind or at any time in the group's development. In the study by Colbert et al. (2012) agreeableness did not predict emergent leadership in MBA and undergraduate student task groups when taking into account other personality traits. Brunell et al. (2008) found that agreeableness did not predict emergent leadership in task groups after controlling for other personality dimensions. Anderson et al. (2008) study found no link between agreeableness and peer-rated influence in a consulting firm or an engineering department. One study did find a positive effect: Ames et al. (2012) found that individuals viewed by their former coworkers' as being agreeable were also viewed by them as being influential. However, it is difficult to know whether this effect was due to shared method variance.

Some studies have even found a negative relation between agreeableness and status attainment. Neubert and Taggar (2004) examined intact manufacturing teams that had worked together for an extended period of time and found agreeable individuals were less likely to be nominated by coworkers as a leader. Cheng et al. (2010) found that agreeableness negatively predicted peer-rated "dominance" in college athletic teams. Bendersky and Shah (2013) found that agreeableness negatively predicted status in the early stages of student project teams.

Why Would Agreeable Individuals Fail to Attain Higher Status? We propose agreeable individuals refrain from engaging in the "micropolitical" behaviors that

would signal their social value to the group. Therefore, while agreeable individuals might *actually* possess socially valued characteristics and engage in more cooperative behavior, they do not develop a *reputation* as such because they do not behave in ways that draws attention to those characteristics or behaviors. Indeed, Anderson and Shirako (2008) found that many individuals who consistently behaved cooperatively and selflessly in their interactions with others still did not gain a reputation for being cooperative; their behavioral pattern needed to be visible to others for others to develop positive perceptions of the individual.

In support of this argument, some evidence suggests agreeable individuals desire higher status less than others (Olson and Weber 2004). Moreover, while extraverts and dominant individuals are willing to engage in a wide range of behaviors to attain higher status, agreeable individuals are not (Kyl-Heku and Buss 1996). For example, while extraverts are willing to boast about their accomplishments, work hard to impress others, display their knowledge to others, and engage in social situations to attain higher status, agreeable individuals are unwilling to do so; in fact, the average correlation between extraversion and status-pursuing behaviors was $r=0.36$, whereas the average correlation between agreeableness and those same behaviors was $r=0.00$ (Kyl-Heku and Buss 1996). In short, therefore, the evidence suggests that status attainment requires engaging in micropolitical behaviors, and that agreeable individuals are unwilling to do so.

Why would agreeableness predict the attainment of *lower* status? Otherwise stated, why would disagreeable individuals sometimes attain high status if they are colder, more aloof, and less concerned about others' welfare? One possibility is that disagreeable individuals are more willing to engage in some of the more deceptive and manipulative tactics to get ahead, such as derogating others, boasting, and aggression (Kyl-Heku and Buss 1996). Similarly, disagreeable individuals are more willing to engage in conflict with others (Graziano et al. 1996), a willingness that can be important to status in some contexts (Cohen et al. 1996). It is also possible that agreeable people are simply more willing to conform and submit more to others' concerns and wishes.

Conscientiousness

Summary of Findings Conscientiousness refers to "socially prescribed impulse control that facilitates task- and goal-directed behavior" (John and Srivastava 1999, p. 121); thus, conscientious individuals are dutiful, hardworking, and organized. The research literature that has examined conscientiousness and status has found that conscientious individuals attain higher status in task-focused contexts such as project teams or workplaces, but not necessarily in other contexts.

In the aforementioned review by Judge et al. (2002), conscientiousness predicts emergent leadership in task groups. Neubert and Taggar (2004) found that conscientiousness predicted peer-nominated leadership in intact manufacturing teams (though the finding was marginally significant). Anderson et al. (2008) found con-

scientiousness to predict peer-rated influence in an engineering department of a telecommunications firm. Cheng et al. (2010) found that conscientious members of college athletic teams were rated by teammates as higher on the "prestige" component of status. Ames et al. (2012) found coworker-rated conscientiousness predicted peer-rated influence in the workplace. And Judge and Kammeyer-Mueller (2012) found that conscientiousness predicted occupational prestige in a longitudinal study of careers.

However, in social-living groups such as fraternities, sororities, and dormitories, conscientiousness did not predict status attainment (Anderson et al. 2001). Moreover, while conscientiousness predicted peer-rated influence in an engineering department it did not predict peer-rated influence in a consulting firm, where teamwork was viewed as contributing to performance relatively more than technical skills (Anderson et al. 2008).

Why Do Conscientious Individuals Attain Status in Some Contexts but Not Others? As mentioned above, the Micropolitics theory argues that groups develop an implicit consensus as to which individual characteristics are valuable to the collective, and allocate high- and low-status positions according to whether the individual possesses relatively more of those characteristics. In many project teams and workplaces, conscientiousness is valuable to the group because conscientious individuals work hard and focus their energies on task accomplishment. Therefore, in those contexts conscientious individuals are given higher status.

However, in other contexts that value task performance less, conscientiousness will have little to no impact on status attainment. For example, in many college fraternities, hard work, diligence, and good grades are likely irrelevant to the group's function and success and therefore irrelevant to status attainment as well. Therefore, conscientiousness would seem less central and valued in these groups, suggesting that it will not predict status attainment. (It is interesting to note that Harms et al. [2007] found conscientiousness to predict peer-rated influence in fraternities and sororities; perhaps these organizations put more emphasis on good grades). Similarly, in the consulting firm studied by Anderson et al. (2008), conscientious individuals' task focus was viewed as less important than the ability to work together with colleagues in a team-oriented culture. As conscientious individuals were seen as providing less important characteristics, they were not afforded higher status.

Neuroticism

Summary of Findings The neuroticism dimension of the Big Five reflects individual differences in negative emotionality, including vulnerability to stress, anxiety, depression, and negative self-conscious emotions, such as guilt, shame, and embarrassment (Costa and McCrae 1992). Research has consistently shown neuroticism relates to lower status.

As with many other personality traits mentioned above, neuroticism consistently emerges as a predictor of emergent leadership in large-scale reviews—except in this

case, it predicts a lower likelihood of emerging as a leader (Judge et al. 2002; Stogdill 1948). Similarly, Deuling et al. (2011) found that in project teams of psychology freshman, neuroticism predicted lower peer-rated influence a full 8 months after the teams had been working together. Judge and Kammeyer-Mueller (2012) found that self- and peer-rated neuroticism predicted lower occupational prestige in a longitudinal study. Further, Bendersky and Shah (2013) found neuroticism to predict lower status in the beginning stages of student project teams.

There have been a number of nuances found in the link between neuroticism and status, however. Anderson et al. (2008) did not find any relation between neuroticism and peer-rated influence in two organizations, for example, suggesting it might not always predict lower status. It is possible these null effects were due to strong display rules in both organizations that prevented the expression of negative emotion. In that case, coworkers would have a more difficult time detecting neuroticism in others. Two studies have also found that neuroticism is far more damaging to men's than women's status: Anderson et al. (2001) found this in college social-living groups, and Neubert and Taggar (2004) found this in the leadership nominations within intact manufacturing teams. In Bendersky and Shah's (2013) study, while individuals higher in neuroticism began low in status, they rose in status over time. However, the bulk of studies have typically found a simple main (negative) effect of neuroticism on status.

Why Do Individuals High in Neuroticism Attain Lower Status? On the surface, it is not entirely clear why neuroticism is such a consistent predictor of lower status in groups. Negative emotionality would not seem to harm group performance or success in any direct way, as long as the person was still competent on important tasks and was willing to contribute his or her abilities for the collective. We believe neuroticism leads to lower status because it leads to the *perception* of lower social value, however. Specifically, individuals high in neuroticism are viewed by others as being less able to make important contributions to the collective, regardless of whether they actually are less capable of doing so.

For example, in Bendersky and Shah's (2013) study, the student project teams expected individuals high in neuroticism originally to contribute less to the team. Over time however, these expectations rose as the group members got to know each other better, presumably because they relied less on negative emotionality as an indicator of individual contribution. Accordingly, those high in neuroticism rose in status over time as well. Similarly, men high in neuroticism are likely viewed as providing less social value because negative emotionality is viewed more negatively in men than in women (Brody 2000), which is likely why men consistently score lower on neuroticism measures (Benet-Martinez and John 1998), and men express these emotions much less than women even in controlled laboratory settings (e.g., Kring and Gordon 1998). Therefore, men in particular might be perceived as providing less social value when they exhibit negative emotionality.

In sum, these findings suggest that neuroticism, perhaps particularly in men, might signal to others one's inability to provide social value. Regardless of whether the experience of emotions like stress, anxiety, and depression indicate any actual

inability to contribute to the group, people might *believe* that it does, and accordingly give individuals high in neuroticism lower status.

Openness to Experience

Summary of Findings Openness describes "the breadth, depth, originality, and complexity of an individual's mental and experiential life" (John and Srivastava 1999, p. 121). This final dimension of the Big Five taxonomy has been linked to status attainment, though the evidence is weaker and less abundant than for other personality traits.

In a review by Judge et al. (2002), openness predicted emergent leadership although it was the second-weakest predictor, behind only agreeableness, which had a null effect on leadership. Colbert et al. (2012) presented evidence for relatively strong relationships between openness and emergent leadership in student laboratory task groups. Bendersky and Shah (2013) also found openness to predict status in student teams at the beginning and 10 weeks into the group's development. George et al. (2011) found that openness measured at age 21 predicted the status of the job women attained at age 52.

However, classic reviews of leadership research did not find openness to be a consistent predictor of leader emergence (e.g., Mann 1959; Stogdill 1948). Anderson et al. (2001) did not find a single significant relationship between openness and status attainment in college social-living groups. Similarly, a study of organizations by Anderson et al. (2008) did not find any effect of openness on peer-rated influence either.

Why Is Openness to Experience a Weaker and Less Consistent Predictor of Status? Though it is difficult to discern from the existing studies exactly why openness to experience matters somewhat less to status attainment than other dimensions, and matters more in some groups than others, we believe the answer again lies in the social value open individuals are perceived by others to provide. Openness correlates with creativity and divergent thinking (McCrae 1987) as well as pursuing intellectual and artistic endeavors (Kyl-Heku and Buss 1996). These talents and tendencies are likely valued in some group contexts more than others, in particular those where the group needs to generate innovative solutions to problems. However, even in groups that value divergent thinking and openness to new ideas, it is possible that many groups fail to detect which of their members are actually higher in openness to experience. Clearly, more research is needed to address these possibilities.

Self-Monitoring

Summary of Findings Snyder (1974) characterizes an individual high in self-monitoring as someone "who, out of a concern for social appropriateness, is particularly sensitive to the expression and self-presentation of others in social situations and uses these cues as guidelines for monitoring his own self-presentation" (p. 528).

Otherwise stated, self-monitors care a great deal about the social appropriateness of their behavior, are sensitive to social cues, and have the ability to control their behavior in response to what is seen as appropriate (Briggs et al. 1980).

Although the relation between self-monitoring and status has been examined relatively less frequently than the traits discussed above, studies suggest self-monitoring does play an important role in status attainment. *First*, self-monitors are more likely to emerge as leaders in task groups: Garland and Beard (1979) found self-monitors emerged as leaders more often in brainstorming teams. Ellis (1988) and also Ellis et al. (1988) examined MBA student groups and found self-monitoring predicted emergent leadership. Zacaro et al. (1991) used a round-robin design and found that self-monitors emerged as leaders in several laboratory task groups. Flynn and Ames (2006) found self-monitors were peer-rated as more influential in MBA project teams. Extending beyond leader emergence in teams, Flynn et al. (2006) found that self-monitors attained higher status in MBA cohorts. It is worth noting that studies have found gender differences in the effect of self-monitoring; however, these effects are inconsistent across studies, with some showing stronger effects for men (Ellis 1988) and some for women (Flynn and Ames 2006; Garland and Beard 1979).

Why Do Self-Monitors Attain Higher Status? Of all the personality traits reviewed in this chapter, self-monitoring is probably the most relevant to the Micropolitics theory of status. As argued earlier, the attainment of status stems from being perceived as socially valuable. Individuals thus engage in micropolitical behavior in part by proactively striving to signal their value to the group—either by conveying their competencies or their collective-mindedness to others. High self-monitors have the ability to ascertain which characteristics are socially valuable, and then modify their behavior to convey those characteristics.

Specifically, research has shown that self-monitors desire status a great deal (Flynn et al. 2006; Fuglestad and Snyder 2010). They pay more attention to their social environment and are more accurate at reading it (e.g., Costanzo and Archer 1989; Flynn et al. 2006; Funder and Harris 1986; Ickes et al. 1990). Their accuracy extends to characteristics that provide status; for example, Flynn et al. (2006) found that self-monitors understood the importance of generosity to status attainment. Furthermore, self-monitors are better able to modify their behavior to signal their social value to others (Lippa 1978; Snyder 1974). Flynn et al. (2006) also found that self-monitors establish a reputation of being generous by helping out others more and by refraining from requesting help from others.

In addition to managing their impressions in a way that enhances their apparent social value, research suggests that self-monitors also tend to occupy positions in a social network that provide them with higher visibility and control over resources such as information and access to others. For example, Mehra et al. (2001) found self-monitors were more central in the social network of a high-tech firm. Oh and Kilduff (2008) also found that among Korean expatriate entrepreneurs in a Canadian urban area, self-monitors tended to occupy positions of brokerage in their social network; that is, they had formed relationships with individuals who did not know each other. Much research has shown that occupying central, brokerage positions

enhances individuals' visibility (Anderson and Shirako 2008) and provides the individual with socially valuable information (Burt 1997).

Narcissism

Summary of Findings Narcissism is a complex of personality traits and processes that involve a grandiose yet fragile sense of self and entitlement as well as a preoccupation with success and demands for admiration (see Morf and Rhodewalt 2001 for a review). Studies that have begun investigating the effects of narcissism on status have found somewhat mixed results. On the one hand, some studies have suggested narcissists attain higher status than others: Paulhus (1998) examined student teams and found narcissism to predict peer-ratings of contributions to the group, performance, and effectiveness (all ratings highly associated with status) at the beginning of the group's formation. Similarly, Brunell et al. (2008) found narcissism to predict emergent leadership in a group task.

On the other hand, some studies have suggested narcissists do not attain higher status than others. In the aforementioned study by Paulhus (1998), narcissism did not predict those same peer-ratings 6 weeks later into the group's development. John and Robins (1994) found that narcissism was unrelated to peer-ratings of performance in a group task. Anderson et al. (2008) also found that in a group task, narcissists did not achieve higher peer-rated status.

Why Is Narcissism an Inconsistent Predictor of Status? As mentioned earlier, narcissism is not considered a single personality trait but rather a complex of personality traits. We believe narcissism has mixed effects on status attainment because some of the traits within the narcissism cluster help individuals attain higher status, while other traits hinder individuals' ability to attain status.

For example, narcissism involves a desire for status (Brunell et al. 2008), which drives many of the micropolitical behaviors that help achieve status (Anderson and Kilduff 2009). Perhaps more important, narcissism also involves a high degree of self-confidence (e.g., John and Robins 1994), and self-confidence has been consistently linked with emergent leadership (for reviews, see Bass 2008; Judge et al. 2002; Stogdill 1948). In fact, studies have shown that confident individuals attain higher status regardless of whether their confidence is justified (Anderson et al. 2012; Kennedy et al. 2013). Why would self-confidence play a key role in status attainment? Research has shown that confident individuals engage in one important type of micropolitical behavior: they display more of the behavioral cues that signal competence to others, for example they speak more, use a confident and factual vocal tone, exhibit a calm and relaxed demeanor, and jump into group discussions early (Anderson et al. 2012). As a result, they are seen as more intelligent and competent (Kennedy et al. 2013).

However, narcissism also involves behavioral habits that can harm status. As Paulhus (1998) notes, "narcissists have an interpersonal style characterized by a competitive and domineering social presence (Morf and Rhodewalt 1993), which may be increasingly offensive over time." Indeed, narcissists tend to be more self-

focused and less concerned about others' welfare. Because status is accorded to individuals who are more collectively oriented, narcissists' selfishness likely harms their status.

In support of this "mixed blessing" account of narcissism and its effects on status attainment, Paunonen et al. (2006) found that military cadets who possessed the "brighter" side of narcissism (i.e., self-confidence) were more often rated as leaders by peers. In contrast, cadets who possess more of the "darker" side of narcissism (e.g., manipulativeness) were not rated as leaders. Similarly, Cheng et al. (2010) found that narcissism predicted peer-rated dominance in college athletic teams, which involved a selfish, aggressive style of behavior aimed at furthering one's own goals. However, narcissism was unrelated to peer-rated prestige, which was focused on the respect and admiration individuals achieved in the eyes of peers based on their competence and value to the group (i.e., status).

Summary and Conclusions

The findings reviewed in this chapter provide strong evidence that personality traits are an important determinant of status attainment. Specifically, extraversion, dominance, neuroticism, and self-monitoring appear to consistently predict status attainment across diverse social and group contexts. Conscientiousness and narcissism can also facilitate status attainment, but their effects appear to be context dependent. Some evidence suggested that openness to experience can sometimes be a determinant of status, though this evidence was somewhat weaker. Agreeableness, however, was not found to predict status attainment.

How can we make sense of these findings? Why do some personality traits predict status attainment whereas others do not, and yet others predict status inconsistently? We sought to shed light on this literature using a recently proposed Micropolitics theory of status (Anderson and Kennedy 2012). In short, the evidence suggests that the personality traits that more strongly and consistently predict status attainment do so because individuals with those traits possess characteristics that provide value to the group, or because they engage in the micropolitical behaviors that enhance their value to the group in the eyes of others. For example, individuals with some personality traits tend to have better social and leadership skills; they engage in social activities more and develop a wider range of relationships with others; or they engage in behaviors that make them appear more competent, even when they are not.

One broader take away from the current review is that personality should play a more critical role in theories of status. As was shown, personality traits—especially some traits—predict status attainment consistently and strongly. Alongside intelligence and demographic characteristics such as race and gender, personality appears to be a driving force behind status-organizing processes. We hope the current review sparks interest in this intersection between personality and status so that we can better understand their important relationship.

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Chapter 6
The Status-Size Hypothesis: How Cues of Physical Size and Social Status Influence Each Other

Nancy M. Blaker and Mark van Vugt

Every winter, northern elephant seals living on the West coast of the United States and Mexico get ready for breeding season by establishing their rank. Pairs of males push themselves up on their front flippers and vocalize individually distinct calls to each other. If neither male accepts a submissive position following this confrontational display, a physical contest ensues. The winner of this fight receives a valuable reward; privileged access to mate with female seals. Such physical contests occur on land and mostly consist of pushing and shoving each other, thereby utilizing their own bodyweight. Larger seals are more successful at winning these confrontations, as smaller seals are more likely to retreat or lose an ensuing physical fight. The loser of the contest recognizes his lower rank, and usually for the rest of the breeding season acts subordinately toward the winner (Haley et al. 1994). This process, which occurs to a certain degree in many species, establishes a hierarchy where some individuals obtain low status or rank, and others obtain high status or rank. Status or rank refers to the position in a hierarchy where those higher in status have relatively privileged access to fitness-enhancing resources, most notably food, mates, and territory (Henrich and Gil-White 2001).

In humans, status hierarchies are sometimes formed by winning or losing antagonistic physical confrontations yet more often by less violent means. The biggest, baddest alpha may successfully enjoy high status in some specialized groups—for instance in violent gangs (Campbell 1984)—but in general our world leaders and billionaires did not get where they are by literally beating up their rivals. Humans have evolved various strategies to climb the ranks, many of which do not involve force, intimidation, and threat. High status is often granted freely to individuals who can somehow benefit the group by for instance sharing culturally relevant specialized knowledge or skill. The result is a status hierarchy based on prestige rather than on dominance as with the elephant seals (cf. Henrich and Gil-White 2001; Cheng et al. 2013; see Cheng and Tracy, Chap. 1, this volume). Despite the fact that human hierarchies seem more flexible we appear to share something in common with other

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species. Across the human and animal world, bigger seems to be better, at least in terms of status. We refer to the association between cues of physical size and status, either real or perceived, as the status-size hypothesis and believe this connection may partially have a biological basis.

In past research, physical stature or height has often been linked to status. Research has shown that taller individuals are seen as higher in status, more dominant (Melamed 1992), and more leader like (Blaker et al. 2013). The reverse is also true: High status individuals are judged as taller (Wilson 1968). In terms of actual outcomes height has several status benefits, and it even provides an advantage in the US presidential elections (Stulp et al. 2013). In this chapter, we review the status–size relationship in several domains of human social interaction, and extend this research by discussing important moderators. The status–size connection depends on what size cues are relevant, how status has been obtained, the sex of the targets, and finally on contextual cues. Some questions we address are: Do height and strength—both aspects of human size—differently affect status perception? Are dominant high status individuals perceived differently from prestigious high status individuals in terms of perceived size? Do children also associate status with size? Finally, is bigger always better in terms of status in both competitive and cooperative environments?

This chapter will focus strongly on perceptions of low and high status individuals. We will begin by defining social status, explaining *why* humans are likely equipped with a mechanism which facilitates automatic and accurate assessment of others' social status relative to their own, and shortly explain prestige and dominance-based status. Secondly, we review literature on height and strength, two elements of human size. What status-related information do these size cues convey to the perceiver? Thirdly, we discuss how size relates to dominance, prestige, and to an important proxy of status, namely leadership. Additionally, we explore how contextual cues influence how status and leadership relate to physical size. In our discussion of status and size, we review much existing literature but also share some of our own recent findings from several experiments. We end with a discussion of the practical implications of a generic status–size perceptual bias, and propose avenues for future research on this topic.

Status Assessment as Evolved Psychological Adaptation

Living in groups brings many advantages for people. For instance, being in a group means that each individual is not completely reliant on him or herself for finding food and water, fighting off predators, or rearing offspring (reviewed in Rubenstein 1978; Van Vugt et al. 2008). Yet group living also comes with the challenge of managing conflicts, building alliances, coordinating social activities, and negotiating status hierarchies (Van Vugt and Kameda 2012). To reap the benefits and avoid the costs of sociality, animal groups tend to form relatively stable status hierarchies, where some individuals have lower or higher "ranking" than others. In a social

hierarchy, high ranking is typically reflected in increased privileges such as preferential access to more or higher quality resources like food, territory, and sexual mates. Ranking within the hierarchy is also reflected in how individuals behave toward each other. Those with high status receive more submissive displays from lower ranking members (for instance grooming), whereas lower status members are more likely to be exposed to dominant displays from higher-status members.[1] The consistent affording of privileges and showing of submissive or dominant displays reinforces and maintains relatively stable status hierarchies, where the individuals recognize their own and others' rank. Such knowledge about individuals' relative status facilitates group cohesion by suppressing conflicts over resources.

Resources such as food, territory, and mates are not infinitely available or of the same quality, and dividing these resources among group members is a dilemma consistently faced by many species, including humans (Van Lange et al. 2013). In the absence of a social hierarchy there would be disagreement and conflict each time a resource needs to be shared. Indeed, in the formation stage of a hierarchy there is a lot more conflict than in later stages, when ranking stabilizes and individuals to a large extent accept their own and others' places (Long and Pellegrini 2003; Pellegrini et al. 2007). Think of receiving a salary at work. Almost every organization has a hierarchy, where lower ranking employees are paid a lower salary than higher ranking employees. This system is generally accepted by the employees, and conflict does not break out every time an employee sees that he or she is receiving a smaller share of money than certain others, perhaps because the employees recognize that some should receive more than others. For instance, it is seen as fair that those in leadership positions generally are afforded a higher salary, or that older employees receive more money because they have more experience. In short, members of a group have a general sense of who ranks where in a hierarchy and this functions as a stabilizing mechanism to facilitate social cooperation and group cohesion.

In order to function in groups with status hierarchies, it is imperative that individuals agree to a certain extent who is ranked where. It is thus a requirement that individuals can make informed decisions to assess their own and other's social status and to behave in ways appropriate for their status position. We suggest that in the same way as humans are equipped to make decisions about who to trust (i.e., cheater detection) or which individuals are genetically related (i.e., kin detection) they have also evolved mechanisms to manage status hierarchies (Van Vugt and Kameda 2012). This status detection system includes mechanisms to extract relevant cues in the environment to assess their status and that of other individuals, mechanisms to behave in ways that are afforded by their status, mechanisms to improve their own relative status, and mechanisms to undermine the status of competitors. Like other

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[1] In human hierarchies these may not just be submissive-dominant displays, but also respectful displays. For instance some languages have different pronouns which are used to address individuals with more respect, such as older or high ranking individuals. In French, "tu" means "you" and is used to address peers and can be seen as disrespectful when used to address certain others, while "vous" also means "you" but is used to convey respect or is used in formal situations. This is related to prestige-based status, and will be discussed later on.

mechanisms, status detection likely has a universal component which has evolved in response to certain selection pressures related to social life.

Humans are of course not the only species with a status hierarchy, and status hierarchies evolved a long time before our species did. It thus seems reasonable to conclude that, at least to some degree, the human ability to gauge social status is the result of evolution and should be viewed as a biological adaptation. This does not necessarily mean that we are all simply born with a common knowledge of who is low or high status, but it at least means that we have evolved specific learning mechanisms which allow us to develop a reasonably accurate judgment of others' social status in adaptively relevant environments. As psychological adaptations are generally the result of complex gene–environment interactions we expect that different status cues will be relevant across different situations and even cultures (Tooby and Cosmides 1992).

We recognize that for humans there are multiple strategies to obtain high ranking within the hierarchy of a group, most notably via dominance or via prestige (Henrich and Gil-White 2001). In a dominance hierarchy, status is obtained through force, intimidation, and inducing fear. Individuals accept others' dominant high status because they are afraid of the consequences if they do not submit to the individual in the high status position. Dominance hierarchies are thought to be functional in settling disputes over resources with the minimum amount of physical conflict (which can be very costly in terms of injury or death). Conversely, in a prestige hierarchy, those high in prestige-based status attain their ranking by so-called free deference, which means that lower ranking individuals voluntarily accept their place and willingly afford the higher-status individual their ranking. Usually prestige-based status is afforded because the prestigious individual has the potential to confer significant benefits on individuals or groups, for instance, because they have a special talent, skill or knowledge which can be transferred to others and used to the advantage of others. Unlike dominance hierarchies, prestige hierarchies are thought to have evolved because they facilitate cultural transmission and social coordination. Those higher in prestige are leaders or role models who are more likely to be copied than those lower in prestige (Chudek et al. 2012).

Since dominance and prestige are distinct evolved strategies for attaining high status in human groups and may be adaptive in different situations, it is reasonable to assume that their evolved social psychology also differs. Being able to accurately assess an individual's dominance is imperative to avoiding physical harm, as it enables you to act submissively toward more dominant individuals who have the potential to overpower you. On the other hand, it also enables you to effectively seize opportunities to gain more or higher quality resources by coercing individuals whom you have the ability to successfully intimidate or beat in a physical confrontation. Accurately detecting highly prestigious individuals is just as important, but for a very different reason. Following prestigious conspecifics implies that you can gain culturally relevant knowledge or pick leaders of the highest available quality.

Accurately assessing others' status is thus an important ability which facilitates group coordination. In this chapter, we develop some specific predictions about the relationship between size and status perception, distinguishing between different

aspects of size and whether status is obtained through dominance or prestige. We also look at different contexts to see if the bias holds in different settings and across samples of different ages.

Two Components of Physical Size: Height and Muscularity

An effective method for rapidly determining others' position in a hierarchy is to draw information from directly observable morphological traits. Research has shown that we use an array of cues to determine someone's social status, which include voice pitch (Puts et al. 2007), facial appearance (Keating and Doyle 2002), body posture (Cashdan 1998), non-verbal emotional expressions (Tiedens 2001; Shariff and Tracy 2009), and physical attractiveness (Anderson et al. 2001; Kalick 1988). Another important status cue is physical size; a contribution of this chapter is to recognize that physical size consists of various components that may convey different status information to perceivers. Humans come in different shapes and sizes, and when we refer to someone as "big" or "small" we can mean several different things. First, humans differ in vertical size—also known as stature or height. Secondly, size can refer to how broad (shoulder to shoulder), muscular, or robust an individual is. Height and muscularity are independent: Given two individuals with the same height, the one with more fat free muscle mass (FFM) will be perceived as bigger. Thirdly, size can refer to the amount of body fat, which we will not discuss in the current chapter for lack of empirical data.

What does height signal and why do humans vary in height—what causes some individuals to be tall and others to be short? The simple answer is that someone's height is mostly determined by how tall their parents are, but the circumstances they grew up in also have a significant influence (Silventoinen 2003). Height has a heritability estimate of approximately 0.8—meaning that 80 % of the variation in height is due to genetic influences, whereas the remaining 20 % is determined by environmental factors. High quantity and quality of nutrition during development contribute to increased height, whilst disease during development generally stunts growth (Silventoinen et al. 2000; McEvoy and Visscher 2009). Thus, individuals growing up in wealthy, privileged environments generally have a better chance of growing to their full height potential than those who grow up in impoverished environments. Height may therefore be an honest signal of status *in general*.

Much research has shown that height is positively correlated with actual social status (controlling for gender as men are significantly taller than women across cultures). For instance, height is positively associated with income (for a meta analysis and review see, Judge and Cable 2004). It is positively related to military rank (Masur et al. 1984) and authority status in the workplace (Gawley et al. 2009). Furthermore, individuals in managerial positions are on average taller than individuals in non-managerial positions (Egolf and Corder 1991), American science professors tend to be taller than the general public (Hensley 1993), and even the US presidential election outcome is partially predicted by height of the winning candidate (McCann 2001; Stulp et al. 2013). There is also evidence that being tall

facilitates an individual's upward social mobility (Bielicki and Charzewski 1983; Bielicki and Waliszko 1992). There is also evidence that an individual's own power position affects their perceptions of height; individuals who were made to feel more powerful over-estimated their own height (Duguid and Goncalo 2012). Moreover, feeling more powerful leads to estimating other people as shorter than oneself, whereas feeling relatively powerless leads to estimating other people as taller than oneself (Yap et al. 2013).

Like height, muscle strength has a strong genetic component, though heritability estimates differ greatly between studies—some report an estimate lower than height's 0.8 and some show a similar heritability to height (see Perusse et al. 1987; Thomis et al. 1998; Huygens et al. 2004). However, its phenotypic expression is strongly dependent on current environmental factors. Muscle mass is determined predominantly by nutrition (specifically the amount of protein in an individual's diet; Deibert et al. 2004), hormonal influences (higher testosterone levels are related to more muscle mass; Griggs et al. 1989), and physical exercise (Jones et al. 1989). Like height, muscularity can serve as a signal of status, as high quality and quantity nutrition is necessary to sustain a large amount of FFM. Yet whereas height cannot be actively manipulated by the individual, muscularity can. Thus, height is perhaps a more honest signal of someone's fitness and social status, whereas muscularity mostly reflects someone's current status as its expression is highly susceptible to environmental influences throughout adult life.

Unlike height, research on muscularity and actual social status is harder to find. There is some evidence that FFM is positively correlated with wages for males—and in some cases females—which is attributed in the literature to a positive correlation of muscle mass with physical health (Böckerman et al. 2010; Wada and Tekin 2010; Bozoyan and Wolbring 2011). However, while we can conclude to a certain degree that being tall positively affects social status, correlational studies on muscle mass and income do not show that being more muscular leads to actually obtaining higher status. Also, while there have been numerous studies over the past decades on the relationship between perceptions of height and (proxies of) social status for men and women (e.g., Dannenmaier and Thumin 1964; Wilson 1968; Lindeman and Sundvik 1994; Murray and Schmitz 2011; Blaker et al. 2013), literature on how muscle mass and perceived social status relate to each other appears to be scarce.

In sum, both height and muscle mass are thus likely to convey status-related information to perceivers, as taller and more muscular individuals have likely been exposed to resource rich environments which are associated with high rank. Next, we break status down into prestige and dominance, and discuss how height and muscularity may relate differently to these status types.

Physical Size and Dominant Status

Dominance hierarchies—hierarchies where rank is established by intimidation, threat, and force—exist in many animal species and evolved long before humans did. We would therefore expect to see certain similarities in human dominance

hierarchies and the dominance hierarchies of other species. Physical size has been linked to dominant status in many species. For example, larger male baboons tend to hold a higher dominance rank than smaller male baboons (Johnson 1987); moorhen that are relatively heavier than conspecifics living near them are more likely to control a larger territory (Petrie 1984); and larger size predicts winning a dyadic contest in for instance jumping spiders (Taylor et al. 2001) and crayfish (Pavey and Fielder 1996). The examples provided aim to illustrate the wide spectrum of species that show a correlation between size and dominance-based status.

A general reason why size and dominant status are closely related is because physical size is a proxy of an animal's physical formidability and its resulting Resource Holding Potential (RHP) (Parker 1974). Physical formidability is the relative ability for an individual to win a contest; either by winning an actual physical conflict or by a display of superior physical dominance which causes the opponent to retreat. Such contests are generally over valued resources, such as food, territory, and ultimately mates—hence the term Resource Holding Potential. If larger size contributes to fighting ability, and valuable resources are contested over by several individuals in a group, we can expect a hierarchy to form where the larger individuals gain privileged access to those valuable resources. Subsequently, the members of that hierarchy recognize other individuals' status (partially) on the basis of their size, and act accordingly to prevent incurring costs such as physical injury.

As noted above, physical size has been linked to dominance in numerous species and we therefore should expect, based on arguments of evolutionary consistency (either through convergent evolution and/or by homology) that size also predicts dominance perceptions in humans. Research has shown that humans have the ability to accurately gauge physical formidability—operationalized as physical strength and fighting ability—by judging photos of strangers' bodies and faces. Morphological cues that were used to obtain this information are related to physical size. Both height and muscularity predicted physical formidability ratings *and* actual physical performance (Sell et al. 2009). Because physical size is a highly sexually dimorphic human trait (meaning that it differs greatly between the sexes, and in humans is much higher in males), height and muscle mass may be a more salient cue of status when exhibited by males than by females (Sell et al. 2012). Puts (2010) has pointed out the importance of male–male contest in shaping human psychology during our evolutionary history, and shows evidence that human males likely (physically) contested each other over access to females in ancestral environments. Even if physical contests are relatively rarely used today to settle difference and to decide rank, it could still possibly have an influence on social status (cf. mismatch hypothesis; Van Vugt and Ahuja 2010; Van Vugt and Ronay 2013).

There are many examples of research showing that height and muscularity are related to perceived physical dominance. For instance, men holding weapons are estimated taller and more muscular (Fessler et al. 2012). Additionally, a study among a small-scale Amazonian society in Bolivia showed that physical size—a composite variable containing height and bicep circumference among other things—was related to assessments of who would win in a dyadic fight (Von Rueden et al. 2008). There is some evidence taller people also behave more dominantly—Stulp et al. (2013) recently showed that taller men and women are less likely to yield to shorter

same-sex individuals coming their way on a narrow path. Muscular individuals additionally show higher levels of aggression (Gallup et al. 2010), act less egalitarian (Price, Kang, Dunn, and Hopkins), and act more self-interested (Petersen et al. 2013). Muscularity's association to testosterone may explain such effects.

Physical Size and Prestige

The above evidence shows that height and muscularity are related to dominance, but could taller and more muscular people also be seen as higher in prestige-based status? Some researchers argue that the so-called height premium—the fact that taller people earn more—is not caused by perceptions of dominance but by a positive correlation between height and cognitive ability. Height has been associated with intelligence, IQ, and cognitive ability in several studies (for an overview of this topic, see Case and Paxson 2006) and these are all desirable, high status qualities in Western industrialized societies. This effect is partially explained by the fact that environmental factors leading to increased height also lead to increased cognitive ability—for example, low exposure to disease and a sufficient quality and quantity of nutrition during development. Apparently this association is something perceivers pick up on.

We conducted an online study in which participants had to rate pictures of men and women dressed in formal business wear. Half of the participants saw pictures of a short man and woman, and the other half saw pictures of a tall man and woman—the people shown on the pictures were identical except for their height, which was manipulated with digital imaging software. Participants were asked to judge the short and tall targets on intelligence, dominance, health, and leadership (e.g., "This person looks like a leader). We found that taller men and women are judged to be more intelligent than their shorter counter-parts—as well as more dominant, healthy and leaderlike (Blaker et al. 2013). Another study also showed that taller women are seen as more intelligent (Chu and Geary 2005).

Research on height and person perception suggests that people (in Western countries) tend to attribute several positive traits to taller individuals. These include competence (Young and French 1996), charisma (Hamstra 2013), and intelligence; such traits are desirable qualities that may give individuals more prestige. Most research has been focused on perceptions of men, but positive traits are also attributed to tall women, such as being assertive, affluent, and ambitious (Chu and Geary 2005). A gender difference concerning such positive perceptions is that taller men are seen as more physically attractive, whereas taller women are not (Kurzban and Weeden 2005). Additionally, Schumacher (1982) showed that stereotypes people hold about successful individuals in Western society overlap strongly with stereotypes of taller people, suggesting that we generally expect taller individuals to be more successful in society. These results strongly suggest that height may be a signal of prestige, at least in Western societies.

Unlike height, muscularity appears to be unrelated to cognitive ability, whereas it predicts aggression and antisocial behaviour (Gallup et al. 2010; Price et al. 2011;

Petersen et al. 2013). Muscularity may thus produce behaviors which are not always appropriate for high status individuals in a prestige hierarchy in which status is freely conferred. Studies have shown a negative correlation between prestige-based status and testosterone and aggression (Johnson et al. 2007). In most situations, we would not expect muscularity to correlate with prestige, or at least to have a stronger relationship to perceptions of dominance than prestige.

To examine this we conducted two scenario studies in which we described low and high status targets to participants. The targets we described in the study had either attained their status via dominant tactics (force, intimidation, threat) or via prestige (having valuable knowledge and skills, and were freely afforded status by others). In one experiment—conducted in our psychology lab with 74 Dutch undergraduate participants—we used a political setting where the low status individual supposedly worked as an assistant whereas the high status individual was a member of a political party (who either used dominance or prestige tactics to gain his status). In a second online study using 179 US participants recruited via MTurk, we used a more abstract representation of status. We described groups of individuals playing a game where valuable points were distributed amongst the players, which could be earned through force (dominance) or offered to them by other players to help the group (prestige). Two players were described as having earned very few points, whereas two other players were described as having earned a high amount of points—one by being dominant and the other by having high prestige in the group.

The results confirmed the status–size hypothesis. In both experiments, high status individuals (both dominant and prestigious) were generally rated taller and more muscular than those with lower status, but there were clear differences between the highly dominant and prestigious individuals regarding estimated muscularity. The high status individual who had used a dominance strategy was estimated more muscular than the high status individual who used a prestige strategy. However, as we expected, both prestige-based high status and dominance-based high status equally increased height estimations in comparison to the low status individual. Thus, in these studies height was positively related to prestige and dominance in an equal manner, but muscularity was more strongly related to dominance than to prestige.

While previous research suggests a relationship between height and prestige, which our results conducted with Western samples support, there is reason to doubt that this is a universally occurring phenomenon. For instance, a study conducted among people of the Tsimane—a relatively egalitarian farming-foraging society in the Bolivian Amazon—shows that although individuals agree that taller adults are physically stronger, they do *not* perceive taller people as socially more dominant— that is, when two people have conflicting interests, whose interests are acted upon— or as more knowledgeable (Undurraga et al. 2012). Another study conducted in the Bolivian rain forest showed that physical size did not predict community-wide influence, a sign of prestige (Von Rueden et al. 2008). Considering that these null effects were found in relatively egalitarian societies, which reflects the conditions in our ancestral past, they suggest that perhaps a certain level of experience with social inequality is required to associate height with prestige and good socioeconomic outcomes (cf. Stulp 2013). Perhaps in cases where inequality is less pronounced and variation in height is lower—as was presumably the case in ancestral human

societies—individuals do not automatically associate height with prestige and social influence (although they may still associate height with physical dominance).

This suggests that size–prestige perceptions are more malleable than size–dominance perceptions. This may not be surprising because different cultures value different qualities in people. For instance, among the Inuit being a good fisherman might give someone social status, whereas among the Bedouin it might be an ability to move the group to a waterhole, in the Yanomamo being a good fighter, and in Western Europe having a high IQ. This suggests that unlike dominance cues, many cues of prestige are culturally learnt over time with implications for the relationship between size and prestige.

To test this idea, in another set of studies, we gave participants descriptions of low and high status individuals (both high in dominance and prestige). Only this time the participants were not adults but Dutch primary school pupils aged 6–12. The children were asked to guess how tall low and high status characters in a story were by picking an illustration from a line-up of men with differing height and muscle mass—much like the adults did in our previous studies. We told the children a short story about an island where two kings lived in their respective castles at each end of the island, along with other people who lived in a few villages in between. The kings each ruled parts of the island. One king was feared by the people on the island and became king because no one dared stand up to him (this character represented high dominance), whereas the other king was supported by the people on the island and they wanted this king to rule (this character represented high prestige). The low status characters were a postman (study 1—with 59 participants aged 6–8) and a baker (study 2—with 237 participants aged 6–12), and the high status individuals were the kings.

Consistent with the adult samples we reported on before, children also rated the dominant high status target as taller and more muscular than the low status target. However, overall the results indicated that the children did not rate the highly prestigious person as taller than the low status target—as adults had done in our two previous studies. Looking at the results per age group we found that two grades (grades 3 and 5) showed a small effect of prestige on estimated height. Yet even in these cases the effect was small and was much weaker than the effect of dominance on estimated height. These results suggest that while dominance is something humans automatically connect to size and from an early age onward—as previously demonstrated in infants aged 10–13 months (Thomsen et al. 2011)—the relationship between height and prestige develops later in life, presumably based on cultural learning and socialization.

The Status-Size Effect in Context: Height and Muscularity Predict Leadership Perception

As indicated, unlike dominance traits, prestigious traits are at least to some degree culturally malleable. A researcher is likely highly esteemed for her intelligence by peers in the academic community, because she has relevant skills to be successful

in that particular environment. However, this does not mean that everyone perceives her as high in prestige. For instance, avid football fans will probably attribute higher prestige to the most skilled football player even if his intelligence turns out low—skills relevant in one domain do not necessarily transfer to others. Children learn who they should give prestige to. They are able to identify models with skills relevant only to a particular context, and pay more attention to them in order to pick the high prestige models to learn from as their "leaders" (Chudek et al. 2012).

Does context determine who we give prestige to and are likely to follow as leaders and does that influence the relationship with physical size? Humans have evolved to function under circumstances of intense competition between groups as well as close cooperation within groups—two scenarios which require different behaviors. Neuropsychological research has shown that we indeed show different patterns of neural activity when we cooperate with someone compared to when we compete with them (Decety et al. 2004). Generally, in order to be successful in a highly competitive intergroup environment it may be adaptive to follow a more physically dominant individual as leader. In contrast, when cooperation is required following a dominant leader may be counterproductive (Little and Roberts 2012). Previous research showed that voters prefer a more dominant masculine looking leader during war, and a more feminine looking leader during peace (Spisak et al. 2012).

In line with such findings, we predict that physical size might affect who we pick as leaders during war or peace. Since muscularity appears to be a salient cue for physical strength, more muscular individuals may be seen as higher in prestige in conflict scenarios and may therefore be seen as appropriate war leaders. Taller individuals, due to their higher dominance and prestige, might be preferred as both war and peace leaders.

The link between physical size and leader perception is theoretically grounded in implicit leadership theories which posit that we have a cognitive schema of what constitutes a typical leader. By repeatedly seeing that leaders tend to share certain characteristics we form this cognitive schema, and we categorize others as leaders to the degree that their traits overlap with those in our schema of a leader (Lord et al. 1984). Evolutionary leadership theories (Van Vugt and Ronay 2013) further suggest that we may have evolved prototypes of leaders for different adaptive problems such as warfare and peacekeeping (King et al. 2009). Based on these ideas, we wanted to test the status–size hypothesis in cooperative versus competitive environments.

We gave a description of a presidential election in a fictional country, Isilia, to an online sample of 418 US participants (average age: 34.85), and asked them to rate the potential leader candidates in the upcoming election on certain qualities—these included ratings of prestige, dominance, and to what degree they looked like a typical leader (we used the peer prestige and dominance scales adapted from Buttermore 2006, by Cheng et al. 2010). These candidates differed in their height, muscularity, and gender. We used the free avatar-creating software MakeHuman to manipulate these traits, and turned the avatars into silhouettes using digital imaging software. Examples of the resulting stimulus materials can be found in Fig. 6.1. At the time of the election, the fictional country was either in conflict with its neighbouring country over valuable natural resources or it was cooperating closely with
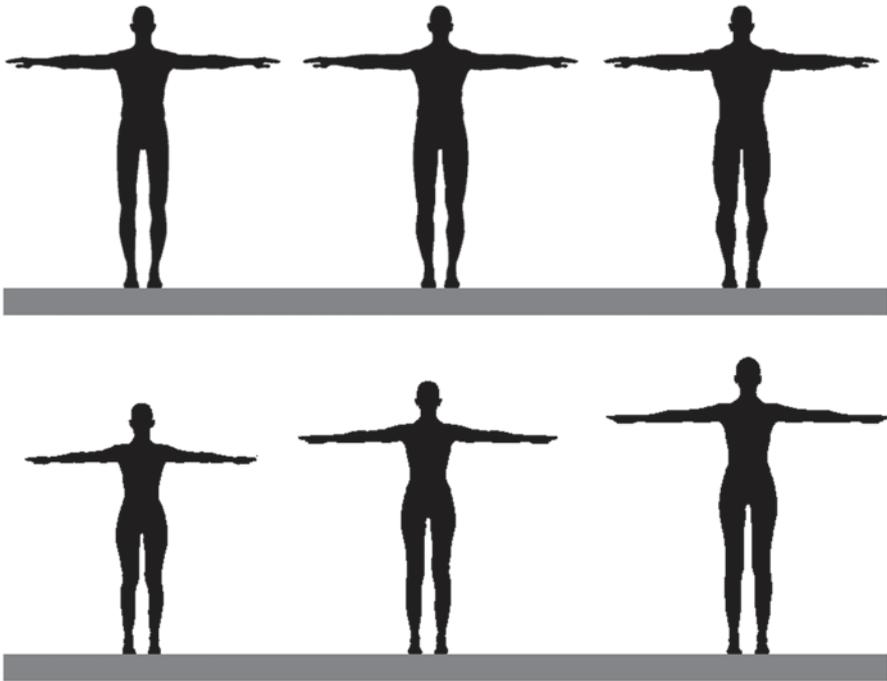
Fig. 6.1 Examples of stimulus material used our study on context and leadership. The top row shows males with different percentages of muscle mass, and the second row shows females of different heights

its neighbouring country to extract valuable natural resources—in this case the valuable resource was oil. Figure 6.2 depicts the general model we tested. Overall, the results showed that taller and more muscular candidates were seen as higher in status (dominance and prestige), and more suitable as leaders across the war and peace scenarios. However, interesting differences emerged between the male and female targets, and between the cooperative and conflict scenarios—especially concerning muscularity and prestige. We found that more muscular male candidates were seen as more prestigious in the war scenario, and subsequently were more likely to be seen as typical leaders. This effect was not found for males in the cooperative scenario, and also not for females in either scenario. Height's effect on perceived status and leadership was far less specific, and in this particular sample occurred across scenarios and gender.

In sum, height and muscularity increase perceptions of status and leadership which confirms the status–size hypothesis. Yet the size–prestige relationship depends upon the nature of the situation. This is especially the case for muscular people whose prestige increased only during war for male targets, presumably because physical strength of a leader is a valuable instrument in intergroup conflict, certainly in ancestral times.
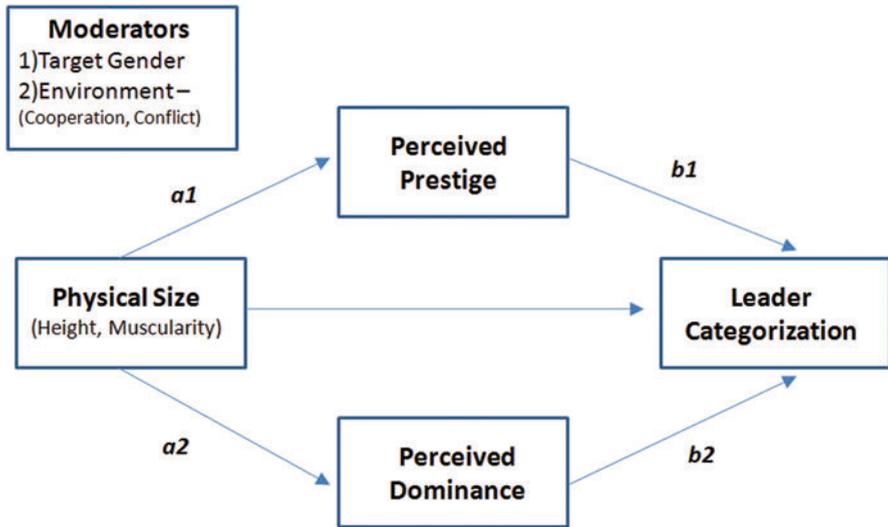
Fig. 6.2 Model predicting status perception and leader categorization from physical size

Discussion and Future Research

Previous literature and our own findings suggest that height and muscularity, though both cues of size and physical formidability, may signal different status-related information to the perceiver. Whereas height is related to attributions of dominance- and prestige-based status across a number of situations, muscularity is much more a dominance indicator. However, in a situation where physical formidability is helpful to the group—for instance in a conflict situation—muscularity may also signal prestige. Finally, whereas size's relation to dominance-based status may be a universal phenomenon, height's relationship to prestige (which we identified in several Western samples) may not be. Although we found that Dutch children aged 6–12 associated dominance with increased height and muscularity like our adult samples do, we failed to replicate the effect of prestige-based status on estimated height among that sample.

Individuals may only attribute prestige to taller individuals if they are exposed to an environment where inequality has caused a strong association between socio-economic status and height (and a relatively high variation in height), like in most Western industrialized societies. This hypothesis could be tested in a fairly straightforward manner—we would expect to find that in populations with more variation in height there would be a stronger relationship between height and perceived prestige-based status. Also, we would expect to find a positive correlation between indicators of a population's inequality (measured by for instance the Gini coefficient, as used in Brooks et al. 2011), and the variation of height in that population.

Almost 50 years ago, Haviland (1967) suggested that inequality can affect height in a population, using skeletal remains from burial sites at Tikal, Guatemala, previously home to an ancient Mayan society. As the structure of this Mayan society evolves from relatively egalitarian, to a division between rulers and commoners, and further into a society with individuals on a continuum from poor to rich, there is a marked change in height variation. In the oldest burial sites of pre-classical times around 50 B.C. where the oldest tomb burials were found, there was no difference in the stature of individuals buried in a tomb (which reflects a burial of someone important) and those individuals buried at regular sites. Then in early classical times, around 1 A.D., a marked difference in stature starts to emerge between those buried in tombs and those buried outside, likely reflecting the propagation of a hereditary ruling class. In later classical times this difference persists, and we also see increased variation in height among the "commoners" (i.e., those not buried in tombs), possibly reflecting increased complexity of Mayan society. This study offers a nice example of how height variation can change depending on the level of inequality in a population.

If an association between height and prestige is something individuals learn by experience, an interesting question is *when* exactly they start associating height and prestige. In our child sample, we found a small effect of high prestige on estimated height (though still much weaker than the effect of dominance on estimated height) in grades 3 and 5. One of our next experiments will look at how adolescents aged 12–18 perceive highly prestigious individuals, and we would expect to see an increasingly strong association between perceived height and prestige with age. Of course, a next important step would also be a cross-cultural examination of this development.

By only discussing height and muscularity as indicators of physical size, we have currently ignored a third important size cue, namely amount of body fat. In the current discussion, we excluded this size cue because we focused on something height and muscularity have in common, but does not necessarily apply to body fat—height and muscularity are a proxy of physical formidability and therefore predict future resource attainment, while body fat is a reflection of past food intake but does not necessarily predict future Resource Holding Potential. The amount of body fat is a direct outcome of the amount of food taken in and therefore is indicative of easy access to food in a resource rich environment—by this logic body fat could possibly be a signal of high status. However, in industrialized societies where calorie-rich food is relatively abundant and easy to access, excess body fat has actually become associated with lower status—obesity is negatively related to socioeconomic status in high-income societies. On the other hand, in low and middle income countries, obesity tends to be positively related to socioeconomic status (for a review on this topic, see McLaren 2007). It would be interesting to see whether body fat also leads to different perceptions of status across those different populations.

We have touched on how the environment can influence how size and status are related to each other, by looking at the differential effects of cooperation and conflict. However, there may be many more situations where we show an adaptive response to by preferring bigger, stronger leaders. We could see in which other situations more muscular individuals are seen as higher in prestige and are preferred

as leaders. First, we would like to find out whether competition in general already elicits an association between prestige and muscularity, or whether an element of specifically *physical* competition needs to be present (as was the case in the scenarios we used—i.e., war). If competition in general elicits the same response, this would have implications for corporations which operate in a very competitive environment, though not characterized by physical conflict. Another example of a context which may influence how perceptions of status and muscularity relate to each other is an environment exhibiting cues of resource scarcity, as for instance in the current economic crisis. In the face of scarcity and uncertainty, humans show an adaptive response in terms of mate choice (Little et al. 2007); an adaptive response to such environmental conditions could also be expected in terms of status and leadership perceptions and preferences.

Results from our own studies showed that people tend to attribute increased height to high status individuals regardless of which strategy that high status person used to obtain his position, but that muscularity is attributed more to those who use a dominance-based strategy rather than a prestige-based strategy. To test whether this effect exists outside the carefully controlled lab experiments, we could compare perceptions of existing leaders who use fear and intimidation to rule (for instance, dictators) versus existing democratically elected leaders. If the same mechanism is at work in this applied case, we should expect that both types of leaders are estimated taller than the general public and as equally tall compared to each other, but that the dictator will also be estimated more muscular than the democratic leader.

There are several other possible avenues of research. For instance, are leaders in certain traditional societies—who are often referred to as "Big Men"—really physically bigger than their followers? There have been suggestions this is the case (e.g., Sahlins 1963; Ellis 1992), but systematic data is scarce or non-existent. Also, is the disproportionate representation of Caucasian males in leadership positions partially due to the fact they are on average taller than other sub-populations in the United States and other Western countries? Although undoubtedly more powerful forces are at play which propagate this phenomenon, it is likely not helpful to women and ethnic minorities that they tend to be shorter on average than their Caucasian male counterparts in many Western countries.

Height and muscularity are salient size cues which are related to attributions of status and leadership. We have tried to point out through a discussion of our own and others' research that this status–size relationship is quite complex, and invites many novel and interesting research questions. The fact that many species share a similar connection between status and size suggests that this phenomenon is partially the result of evolution, which is further supported by research showing that infants and children already connect dominance with size. However, the connection between height and prestige-based status may not be universal as there are examples of societies where increased prestige is not attributed to taller people, and our data additionally shows that children in the Netherlands do not estimate high status prestigious individuals taller than low status individuals. The environment can change how size and status influence each other, as can the gender of the target. We conclude that height and muscularity both contribute to perceptions of status and leadership, and vice versa.

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Chapter 7
Prosocial Behavior and Social Status

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Prosocial Behavior and Social Status

Among the Kwakiutl of Vancouver Island, chiefs actively compete with one another for prestige by hosting elaborate feasts known as potlatches (Piddocke 1965). At potlatches, items of wealth like canoes and blankets are generously donated to other tribes, and "rival" chiefs must in turn host an equally elaborate or more expensive feast to avoid losing prestige. This example is far from unique: people across the globe use generosity as a route to social status, either directly as in the Kwakiutl or indirectly as a means of acquiring the material or social capital necessary for social success including status competition (reviewed by Barclay 2010a).

By contrast, recent research suggests that high status people are *less* likely to be generous in several situations than low status people. Compared to low status people, high status people give less in experimental games, are less endorsing of charitable donations, and are more likely to endorse a number of unethical behaviors (Piff et al. 2010, 2012). Such results seem to contradict the suggestion that prosocial behavior is positively related to social status. What's going on?

Social status and prosocial behavior are ubiquitous in human interactions, but it is not necessarily obvious how and why they should interact. Does prosocial behavior affect one's social status, and if so, when and to what extent? Or does one's social status affect one's prosocial behavior, and if so, does it increase or decrease prosociality? The current chapter examines the interactions between social status and prosocial behavior, in both directions of causation: how prosocial behavior affects the acquisition of status, and how possession of status affects prosocial behavior. We

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will also discuss how (and why) the effects of status on prosociality depend on how status changes the costs and benefits of prosociality by affecting factors like people's (in)dependence, vested interest in group members, ability to be prosocial, and desire to maintain status. Before diving into the details, we must first define "status" and "prosociality" and explain why we should predict that they will affect each other.

What is Status? Why Connect Social Status and Prosociality?

Social status includes, but is not limited to, constructs such as socioeconomic status (SES), social class, resource-holding potential, and social influence. Broadly defined, it refers to the influence one has over group decisions and over the distribution and use of valuable resources, such as food, territories, mates, and coalition partners (reviewed in Cheng et al. 2010). These resources are essential for survival and reproduction, so controlling them results in higher-status individuals having higher reproductive fitness in humans and other primates (e.g., Mealey 1985; Nettle and Pollet 2008; Pusey et al. 1997). Natural selection "designs" organisms to strive for and desire things that positively impact reproductive success (e.g., food, sex, and safety), so it should be no surprise that the pursuit of status is pervasive in human (and nonhuman) social life (see the other chapters in this volume). Of course, people need not be aware of any link between status and reproduction: status motives are a *proximate mechanism* that triggers behavior within the individual, but the *ultimate function* of possessing those motives (i.e., the reason why those motives evolved in primates) is because possessing high status brings survival and reproductive benefits (see Tinbergen 1963 for this distinction between proximate and ultimate causes, see also Scott-Phillips et al. 2011).

   Prosocial behavior refers to acts that increase the well-being of other individuals, often at a cost to oneself. Why connect this with status? There are at least two reasons. Firstly, prosocial behavior can be used to help achieve status. Researchers distinguish between two types of status: *dominance*, which typically involves the imposition of costs on others; and *prestige*, which typically involves the distribution of benefits to others (Henrich and Gil-White 2001; Cheng et al. 2013; see Cheng and Tracy, Chap. 1, this volume). We will argue that prosocial behaviors like generosity, public service, and enforcement of group norms can be used to increase or maintain status by either: (1) leading directly to prestige-based status, and (2) directly resulting in material gains which will later affect how successful one is at either type of status competition (dominance or prestige). Table 7.1 outlines some of these ways that prosociality results in material gains.

   A second reason to connect status and prosociality is that possessing status can change the costs and benefits of engaging in prosocial behavior. For example, some forms of cooperation can help the cooperator avoid punishment; if high status individuals are able to avoid punishment due to their status, they may have less need to engage in those forms of cooperation. One specific case of this is with tax

Table 7.1 People who help others can benefit in a number of ways, as outlined by the theoretical concepts below (reviewed by Barclay and Van Vugt in press). These can all affect the acquisition of status either directly (e.g. acquisition of prestige), or because the return benefits from helping others will put the helper in a better position later when competing over status in more traditional ways. People need not be aware of these benefits when they help. The explanations below are not mutually exclusive, because more than one concept may be involved in the explanation for a given phenomenon. For each of the theoretical rationales below, we also outline potential connections with status, especially ways in which the possession of status could change the costs and benefits for helping

Theoretical concept	Explanation	Why help?	Examples	Connections with status
Hamiltonian nepotism (e.g. Hamilton 1964)	Helping kin	Inclusive fitness gains: Kin are statistically likely to carry copies of rare genes, so genes that cause nepotism are benefiting copies of themselves	Parental care; hiring relatives	Kin support each other in status competition; high status individuals are more likely to be related to group members (i.e. more nepotistic incentives to help group members)
Reciprocity: direct or indirect (e.g. Trivers 1971; Nowak and Sigmund 2005)	Helping that will likely be repaid either directly by the recipient or indirectly by others in the population who observe the help	Reputational benefits: the average gains from receiving help later outweigh the costs of helping now	Lending money; "Secret Santa" gift exchanges; exchange of coalitional support ("you scratch my back and I will scratch yours")	Gains from reciprocity can be used for status competition (e.g. coalitional support); high status individuals can help at lower cost but might also need less reciprocation
Stake or vested interest (e.g. Roberts 2005; Tooby and Cosmides 1996)	Helping those whose well-being is directly valuable to you	Stake in recipient's welfare: the benefits from the ongoing relationship outweigh the costs of helping	Giving coffee to your driver at night; participating in collective defense of one's group; saving a researcher who is about to discover the cure for your disease	High status individuals benefit more from the group's existence; other group members may have greater vested interest in the well-being of prestigious individuals
Avoiding punishment (e.g. Yamagishi 1986)	Helping others when a failure to do so would result in punishment	The cost of helping can be less than the cost of being punished for not-helping	Paying taxes; taking one's turn at some duty (e.g. jury, sentry)	High status individuals may be more able to evade or avoid punishment

Table 7.1 (continued)

Theoretical concept	Explanation	Why help?	Examples	Connections with status
Byproduct mutualism, including Volunteer's Dilemma (e.g. Clutton-Brock 2009; Diekmann 1993)	Performing actions that benefit yourself and just happen to benefit others also	The benefits to others are an indirect consequence (a.k.a. an "externality") of an otherwise self-benefiting action	Shoveling a sidewalk that others also use; vigilance against predators or threats; fighting common enemies; hunting food that others then scrounge	If one person dispenses externalities, then others confer prestige upon them in exchange for access to those externalities; high status people may pay lower costs for helping or receive a disproportionate share of public goods
Costly signals within biological markets (Barclay 2013; Smith and Bird 2000)	Helping others will advertise a trait that is desirable to others (e.g. resources, abilities, willingness to help)	Increased likelihood of being chosen by others for valuable social partnerships and/or avoided as enemies	Extravagant public philanthropy (to signal resources); hunting and sharing difficult-to-acquire game (to signal abilities); unpaid internships or volunteering (to signal willingness to help)	Others directly confer status on those who help; high status individuals can more easily pay the costs of extravagant help; low status individuals pay lower opportunity costs for performing mundane help (see Barclay and Reeve 2012)

avoidance: paying taxes contributes to group benefits, and failing to pay taxes can result in fines and punishment, but for rich individuals or corporations it is more cost-effective to avoid both taxes and punishment by hiring accountants to find tax loopholes, lawyers to defend against legal charges, and/or lobbyists to influence tax legislation. Table 7.1 outlines a variety of ways that status can alter the relevant costs and benefits for different kinds of prosociality (see also Barclay and Reeve 2012).

These two links between prosociality and status—using prosociality to achieve status and status affecting the cost/benefit ratio for prosociality—can help explain the apparently discrepant findings described at the outset of this chapter. Let us examine each of these links in turn.

Helping in Order to Gain Status

Evolutionary theory identifies many ways that those who help others may benefit from doing so (see review in Barclay and Van Vugt in press). For example, those who help others are more likely to receive help when in need themselves (Trivers

1971; Nowak and Sigmund 2005). Helping may also communicate information about the helper's ability or willingness to confer benefits upon others, such that people choose helpers as partners and allies and/or avoid them as enemies (e.g., Barclay 2013; Smith and Bird 2000). Alternately, helpers may have a vested interest in the well-being of those who they help, perhaps because they rely on the recipients in some way (e.g., Roberts 2005; Tooby and Cosmides 1996). Table 7.1 outlines various ways in which helpers could benefit from their actions (for a full review, see Barclay and Van Vugt in press). These returns put helpers in a better position to compete with others over status, and sometimes directly lead to an increase in prestige. Do these strategies work, and do people who help more tend to receive higher status? Below we review laboratory and field data from various disciplines, such as economics, psychology, and anthropology, which suggests that they do.

Field Data

Big game hunters from diverse traditional societies receive more reproductive benefits than nonhunters (e.g., Hill and Kaplan 1988; Smith et al. 2003; Smith 2004). For instance, the Ache, who hunt big game in Paraguay, share their hunted meat with members of the tribe, and the best hunters have more sexual partners than other men do (Hill and Kaplan 1988). Similarly, among the Meriam turtle hunters from the Torres Strait, hunters who share turtle meat have higher reproductive success: Hunters, compared to age-matched nonhunters, have earlier first mating experiences, more children, and have access to more desirable females (Smith et al. 2003; Smith 2004). Hunters even purposefully aim their hunting efforts toward difficult targets to advertise desirable qualities (i.e., physical and resource-acquisition abilities), and compete among each other for the title of best hunter, to gain status within the community (Hawkes and Bliege Bird 2002; Smith and Bird 2000).

Much like the Kwakiutl potlatches, various other traditional societies regularly engage in ceremonies to showcase a tribe's status. Numerous New Guinean tribes, such as the Metlpa, Enga, and Gawil, perform elaborate exchanges during rituals known as mokas (Brown 1978). In order to signal a tribe's wealth and status, large pigs are exchanged. Pigs must be in mint condition to avoid humiliation and decrease in status: A tribe able to give away several large and fattened pigs effectively advertises their access to highly indispensable resources. Such exchanges are extremely important not only for the group but also for the individual (Brown 1978). After the exchange, pigs are cooked and served in a large feast where males often propose marriage to females of neighbouring tribes. If a male's tribe contributes too few pigs, or small pigs, to the moka exchange, then the loss of a tribe's reputation could result in the rejection of marriage initiations. Thus, generosity during elaborate ceremonies, such as mokas and potlatches, can serve as a means for tribes to boost, or maintain high, social status.

The previous three examples have focused on prosocial actions signalling resources and/or physical ability as a means to status. Actions that simply signal one's good character can also result in reputational benefits. For example, the Shuar

people of Ecuador highly value helpful contributions to community engagement (Price 2003). In fact, the more one gives to the community (via attendance of community meetings, offered labour for community based needs, and years worked in the community public office), the more the individual is perceived to have high social status. These high status individuals relish in their ability to place sanctions on those who fail to contribute a fair share to the community, and are deemed kind and altruistic for their generous role in collective action (Price 2003). Altogether, these various field examples show that people can gain status and reputational benefits by signal access to resources, physical abilities, or simply one's good character.

Laboratory Evidence

Across the globe, generosity is not only prominent in the field but also within laboratory settings. Henrich et al. (2001), for example, conducted a cross-cultural study that examined prosocial behavior in fifteen small-scale societies, including herders, horticulturalists, and agriculturalists from twelve countries across five continents. Participants played an anonymous one-shot ultimatum game, whereby one participant (a "proposer") was given a set amount of money equivalent to one or two days' wages, and was asked to divide this amount with another participant (the "responder"). A "proposer" could offer any amount to his/her partner, and if that "recipient" were happy with the offer, he/she would accept it and both participants were allowed to keep the money. If the recipient deemed the offer unfair, however, he/she could reject it and both parties would leave empty handed. Instead of acting out of rational self-interest, whereby the "proposer" would offer the least amount possible and the recipient would accept any amount of money (because any amount of money would be better than leaving with nothing), participants across societies consistently made nontrivial offers to their partners. Additionally, participants in some societies made hyper-generous offers. Follow-up studies have shown similar results with other measures of prosocial behavior (Henrich et al. 2006, 2010). Such results initially appear to be irrational, but could be expected when viewed in light of evidence of the status benefits associated with prosociality (e.g., Barclay 2004; Hardy and Van Vugt 2006; Price 2003; Van Vugt and Hardy 2010; Willer 2009).

Multiple laboratory studies show that prosocial people tend to receive social benefits from others. One way to demonstrate this is to give people the opportunity to act positively or negatively toward helpers. For example, Barclay (2004, 2006) had participants play a cooperative game where people could contribute money toward a group fund which benefited all group members, and then allowed participants to entrust money to other participants based on their reputations. People who contributed more to the group fund were entrusted with more money than people who contributed less. Similar results have been found by other researchers (e.g., Clark 2002; Milinski et al. 2002a; Semmann et al. 2004; Van Soest and Vyrastekova 2004). People who contribute toward their groups are also chosen more often as interaction partners (Barclay and Willer 2007; Sylwester and Roberts 2010), preferred as leaders (Milinski et al. 2002b), rated as more desirable partners for long-term

relationships (Barclay 2010b), and are perceived to be trustworthy and have high social status (e.g., Barclay 2004; Hardy and Van Vugt 2006; Price 2003; Van Vugt and Hardy 2010; Willer 2009). Uncooperative people tend to receive verbal criticism or even more tangible punishment (e.g., Barr 2001; Fehr and Gächter 2002; Yamagishi 1986).

For helping to be a useful means of acquiring status, other people must be aware of the help. If status motives underlie helping behavior, we should expect people to be more cooperative when information about their actions will be available to others. Indeed, the tendency for generosity or cooperativeness to decline as anonymity increases is well established by theory and evidence from economics (Hoffman et al. 1994; Andreoni and Petrie 2004; Rege and Telle 2004), psychology (Kurzban 2001; Barclay 2004), biology (Barclay and Willer 2007; Milinski et al. 2002a, b; Sylwester and Roberts 2010; Wedekind and Milinski 2000), and political science (Bixenstine et al. 1966).

Even exposure to a subtle cue of observation, an image of watching eyes, has been shown to increase generosity (Haley and Fessler 2005; Mifune et al. 2010; Oda et al. 2011; Rigdon et al. 2009; Nettle et al. 2013), contributions to publicly shared resources (Burnham and Hare 2007), and condemnation of theft and deception (Bourrat et al. 2011). This "eyes effect" seems to be motivated by a concern for reputation (Oda et al. 2011) and has also been shown to affect various forms of real world cooperation, including charitable donations (Ekström 2011; Powell et al. 2012), garbage clean-up (Ernest-Jones et al. 2011; Francey and Bergmüller 2012), and donations to a public good (Batson et al. 1997). The eyes effect emerges most reliably when there are fewer real observers around (Ernest-Jones et al. 2011; Ekström 2011; Nettle et al. 2013) and may not last very long (Sparks and Barclay 2013). Despite these limits, strategic placement of reputation cues may be an effective way to increase cooperation in otherwise anonymous settings (see Barclay 2012 for a discussion).

People can gain status not only by giving or helping others but by enforcing norms of cooperation. Many researchers have noted that people contribute more to their groups when noncontributors can receive punishment. But why expend the cost and effort to punish others? Barclay (2006) used a cooperative group game to show that people readily paid to punish those who do not contribute toward a group fund that benefited all group members, and that the people who paid such costs were perceived by other participants as being more respected, trustworthy, and group-focused than nonpunishers. Those who punished noncontributors were also entrusted with more money, demonstrating a tangible benefit for enforcing norms (see also Nelissen 2008).

With the benefits gained from a prosocial reputation, it is not surprising that recent evidence has shown individuals actively competing to be more generous than others, a notion known as competitive altruism (e.g., Barclay and Willer 2007; Roberts 1998; Sylwester and Roberts 2010). Barclay and Willer (2007) found evidence of competitive altruism by having participants complete a prisoner's dilemma game in groups of three. In the first round, two of the three participants (i.e., participant A and B) engaged in a one-time cooperative task where each could donate money to the other at a cost to oneself, with any donations increasing in value (a "simul-

taneous gift-exchange"). In the second round, the third participant (i.e., participant C) did this same cooperative task with one of the other two (i.e., with either participant A or B) in one of three experimental conditions: Participant C was either (1) randomly assigned a partner and given no information of the partner's behavior in the previous round, (2) randomly assigned a partner and informed of the partner's behavior in the first round, or (3) allowed to choose a partner after gaining knowledge of the behaviors of potential partners in the previous round. Barclay and Willer (2007) showed that participants A and B escalated their levels of prosocial behaviors when participants C were able to choose partners. Using an almost identical experimental design, Sylwester and Roberts (2010) found similar results in that participants were less prosocial when individuals were randomly assigned partners, and most generous when interaction partners were explicitly chosen. These studies show that individuals will compete to be more generous than others whenever it will affect their reputation and their access to social partnerships (for a review, see Barclay 2013).

Priming Status Motives

Some research has also examined how people behave when status motives are activated experimentally (e.g., Griskevicius et al. 2009). Consistent with the idea of competitive altruism, this research finds that a desire for status can lead people to become more prosocial and self-sacrificing, such as by choosing prosocial products (Griskevicius et al. 2010). For example, consider the reason why over a million Americans have bought a Toyota Prius, a popular Hybrid gas-electric car. In one study Prius owners were asked "What was your primary motivation for buying the Prius?", and the overwhelming majority—66%—said they bought a Prius because they wanted to be environmentally friendly (Topline 2007). But while many people say they purchase green products such as the Prius to do good for the environment, a consideration of competitive altruism suggests that rather than seeking to help Mother Nature, consumers might instead be seeking to help themselves—by going green to be seen.

   To test this idea, researchers had people choose between two cars—a luxurious nongreen model and an equivalently priced but less luxurious green Hybrid; the latter sported an enticing "H" (for Hybrid) to publicly proclaim the owner's pro-environmental concern and awareness. Before people made their choices, though, the researchers activated status motives in half of the participants. These subjects read a short story in which they imagined arriving for their first day at a high-powered job, where they would be competing with several others for an opportunity to move up into a prestigious corner office; this story had been used in previous experiments to cause people to seek the things that would get them status (Griskevicius et al. 2009). The study revealed that status motives had a dramatic influence on people's car choices (Griskevicius et al. 2010). Without a desire for status (in the control condition), most people chose the top-of-the-line combustion car model over the dinkier Hybrid. But when status was activated, people's choices reversed. More than half of

the status-minded people chose the Hybrid. In fact, these go-getters also preferred other green products such as ecologically friendly dishwashers and recycled back-packs over their conventional counterparts.

Why did a desire for status lead people to forgo luxury and go green? Is it be-cause these upward-bound risers were somehow inspired to be altruistic and self-sacrificing for the environment? Not exactly. Instead, a second study found that a status motive led people to go green only if they could show off their green wares to others (Griskevicius et al. 2010). If your neighbors could not easily see the sac-rifices you're making to help the planet, then it was not worth it. The "going green to be seen" studies suggest that many choices that appear altruistic often belie a deeper desire for status that comes from appearing altruistic. From this perspective, a Prius is essentially a mobile billboard conspicuously advertising the owners' pro-social green concerns. Other studies have found similar results in different domains of helping: for example, being primed with romantic motives causes women to report more willingness to engage in prosocial behavior like volunteering to help others, and causes men to report more willingness to engage in heroic helping such as rescue others from dangerous situations, but this only appears when such acts are conspicuous (Griskevicius et al. 2007).

Applications

Consideration of competitive altruism suggests that people are particularly moti-vated to compete for status through prosocial and environmental behaviors that can signal self-sacrifice. A key component of harnessing the desire for status to benefit the environment (for example) is that environmental acts need to be visible to others (e.g., Barclay 2012). For example, recall that status desires motivated people to seek green products only when someone was around to see it. This suggests that firms or organizations should provide people with visible signs or tags for choosing proso-cial options, so that people can clearly display their self-sacrificing acts.

Competitive altruism also suggests that a particularly effective strategy to facilitate prosocial behavior is to publicize lists that rank the greenest or most phil-anthropic companies, celebrities, or ordinary citizens. Media mogul Ted Turner, for example, once bemoaned the influence of the *Forbes 400* list of richest Americans, pointing out that this publicized list discouraged the wealthy from donating to char-ity for fear of slipping down in the rankings. Perhaps it was not a coincidence that a public list of top philanthropists—the *Slate* 60—was established the very same year that Turner publicly pledged 1 billion $ to humanitarian relief. Similar types of publicized lists of "least polluting companies" in India have been remarkably effective at motivating firms to voluntarily reduce pollution (Powers et al. 2008), suggesting that people worldwide are willing to engage in self-sacrificing behavior to avoid appearing at the bottom of a status hierarchy.

Consideration of competitive altruism also has implications for the pricing of green and other types of prosocial products. This perspective suggests that some-

times increasing the price of a green product can lead that product to become *more* desirable because it signals that purchasers are prepared to incur costs. For example, after US tax credits for the pro-environmental Toyota Prius expired, sales increased by 68.9 % (Toyota 2008). Although this increase might have been even larger had the tax incentive remained, pundits were similarly bewildered by Lexus's decision to begin selling a hybrid sedan priced at more than $ 120,000. Yet again, sales of the pro-environmental and ultra-expensive Lexus LS600h exceeded projections by more than 300 % (Ramsey 2007).

When green products are cheaper than their nongreen counterparts, their desirability can decrease because such products might convey to peers that their owners cannot afford more expensive alternatives (Griskevicius et al. 2010). This means that making some green products cheaper, easier to buy, and more time-saving might undercut their utility as a signal of environmentalist dedication. A similar argument holds for all other types of socially responsible products. There is a careful balance between making such products expensive enough to serve as conspicuous signals of status, yet cheap enough to be usable by more than just the elite. For example, companies may wish to develop two lines of green products: an expensive line to appeal to the wealthy, and a cheaper line to appeal to as many others as possible (especially for privately consumed products). When it comes to applications, the idea of competitive altruism presents many fruitful directions. Whereas competition for status has often been viewed as an unsavoury endeavour, the same thirst for status can be channelled to facilitate socially beneficial rather than wasteful behavior. For example, encouraging competition on pro-environmental outcomes might motivate people and firms to voluntarily adopt more sustainable practices.

Helping (or Not-Helping) as a Consequence of Status

> Power tends to corrupt, and absolute power corrupts absolutely. Great men are almost always bad men.—Lord Acton

The previous section described how prosocial behavior can be a means of accessing the material and social rewards that accompany elevated status, and how status-seeking can motivate prosocial behavior. Having already examined how prosocial behavior affects status, we now reverse the causal arrow and examine how status affects prosocial behavior.

Does achieving higher status change people's behavior? Experimental economists Ball and Eckel (1998) artificially conferred high status on half of their participants by presenting them a gold star in an award ceremony. After this simple manipulation, higher status players received better offers in bargaining simulations. In market games, higher status buyers paid lower prices and higher status sellers received higher prices. Ball and Eckel (1998) concluded: "the economic value of status is that it changes everyone's expectations about what is a reasonable outcome of an economic game… a mere star induces subjects to behave differently, even when it is awarded based on transparently random criteria." (p. 511) (see also Ball et al. 2001).

Why would a mere star change someone's behavior, let alone change behavior so reliably that everyone expects it? Such a simple cue probably changes people's expectations about what others will demand and will grant, and helps form a focal point for people to coordinate their behavior around (a focal point is any salient point that people naturally converge on when solving coordination problems; see Schelling 1960). Status differentials may be a common way to solve coordination problems (Eckel et al. 2010). On a deeper level, this simple manipulation is a window into a psychology that is powerfully designed for negotiating status relations and their effects on what one can and cannot do. In this section, we discuss how status changes the costs and benefits of social behaviors, and along the way we review and integrate evidence from several disciplines about the effects of status on prosocial behavior. The literature shows that possessing status can increase or decrease prosocial behavior, depending on how it affects the costs and benefits of prosociality.

We will discuss four examples of ways in which possessing status can affect the costs and benefits of prosociality (and thus affect levels of prosociality): by affecting people's dependence on others, their vested interest in others, their ability to be prosocial, and their need for status maintenance. There are many other ways, however, that possessing status could change the costs and benefits and benefits of prosociality. For example, unstable status hierarchies create greater opportunity costs for investing in prosociality instead of status competition, and thus increase high-ranking people's tendencies to manipulate group members (Barclay and Benard 2013). The costs and benefits of prosociality may also be different for status based on prestige versus dominance.

Conceptual Links Between Status and Social Behavior

(In)dependence

Greater resource access affords high status individuals more freedom and independence in the pursuit of their goals. By contrast, limited control of material and social resources leaves low status people more dependent on others to fulfill their needs and wants. As such, status-based differences in social dependence are associated with differences in social cognition, social emotion and social behavior, including prosocial behavior.

If someone's outcomes depend on forces outside of his/her direct control, then he/she would benefit from being more aware of social situations (and the influence of situations on behavior). Accordingly, lower-status people are more attentive to context and are more likely to favour contextual explanations of outcomes than are high-status people, who tend to endorse dispositional explanations (Krauss et al. 2009). Social context is especially important, because with heightened vulnerability to external forces and dependence on others comes a greater need to understand others' goals and feelings. Psychologists employing a variety of correlational and experimental methods have shown that lower status people are better at gauging the

emotional and mental states of others (Snodgrass 1985, 1992; Galinsky et al. 2006; Thomas et al. 1972; Rutherford 2004). Krauss et al. (2010) found that low socio-economic status was significantly associated with greater accuracy in identifying the emotions experienced by another participant during a mock job interview. The extent to which each participant used contextual explanations on an unrelated task was an even better predictor of their accuracy in identifying emotions than their socioeconomic status, which supports the contention that differences in empathetic accuracy associated with status are caused by differential attention to the social environment (Krauss et al. 2010).

So, material circumstances and personal control influence social cognition and emotion such that higher status people tend to be more self-oriented, and lower status people more other-oriented, in their thoughts and feelings (Krauss et al. 2011). Piff et al. (2012) hypothesized that these tendencies would lead to predictable differences in antisocial behavior as a consequence of status. A series of experimental and correlational studies confirmed that higher class individuals are more likely to perform or endorse unethical behaviors including lying in negotiations, cheating to win cash, cutting off other drivers in violation of traffic laws, taking candy from children, and engaging in unethical business practices. Similar logic may explain why men with dominant facial and vocal characteristics are more unethical and aggressive (Haselhuhn and Wong 2012; Puts et al. 2012): those more capable of pursuing their goals independently derive less benefit from considering and acting on the interests of others.

Antisocial behavior does not necessarily imply a lack of prosocial behavior, so we need to explicitly ask: do the same patterns hold for prosocial behavior as for antisocial behavior? Because high status individuals are generally more independent, we should expect they'll be less attentive to the needs of others and thus engage in less helping behavior. Piff et al. (2010) found support for this hypothesis in a series of four studies, finding (1) people reporting lower subjective SES gave more money to an anonymous partner, (2) those who were experimentally made to feel of a lower social rank more strongly endorsed charitable donations than those made to feel higher ranking, (3) lower educational attainment and annual household income was significantly associated with more egalitarian social values and more trusting behavior in an economic game, and (4) people reporting lower past and current incomes assigned less work to a distressed partner (taking on more of it themselves) than wealthier individuals. These studies establish a clear association between high status and reduced prosocial behavior.

Vested Interest

Being part of a social group is valuable, and so people directly benefit from efforts to preserve the existence of their groups (Barclay and Benard 2013; Kokko et al. 2001; Lahti and Weinstein 2005; Reeve and Hölldobler 2007). Within groups, those of higher status claim a disproportionate share of group benefits by definition (Henrich and Gil-White 2001; Reeve and Shen 2006) and thus are disproportionately harmed by threats to the group. As a consequence, they may benefit more than low

status individuals from helping behaviors that preserve group stability and viability, such as vigilance, group defense, and enforcement of group norms. In addition to receiving disproportionate benefits, high status individuals may have more kin in their groups, either because those kin helped them to attain status (Chagnon 1997) or because they used their status to produce more offspring (Mealey 1985; Nettle and Pollet 2008). This higher relatedness to group members—when present—could also cause high status individuals to be more prosocial than low status individuals. We look forward to tests of these predictions.

This prediction—that greater vested interests will cause high status people to help more than low status people—might seem to contradict the evidence presented earlier that high status people help less because the former are more independent. There is no theoretical contradiction here. Instead, we are pointing out how two different forces—vested interests versus independence—can push in opposite directions (Barclay and Reeve 2012). The relative importance of vested interests and independence will vary across situations and with different kinds of prosociality. If cooperation is the only way to manage threats to the group, threat conditions will reduce or eliminate the relative independence of goal-pursuit that higher status people normally enjoy; the champ might have many more ways to feed himself or find a mate than the chump, but the only way either can survive an impending massive attack by their hostile neighbors is through highly coordinated collective defense. Also, the tendency for high status people to be less considerate of the interests of others and more self-focused is less of an obstacle to helping when everyone's interests are aligned. The interaction of such forces requires more theoretical and empirical investigation.

Ability

By definition, people with higher status enjoy privileged access to money, education, and valuable social institutions. Those who control more resources can deliver the same objective quantity of help at a lower personal cost (i.e., a lower percentage of their total resources), which may make them more likely to provide that help (Barclay and Reeve 2012). For example, if a person pays lower costs for providing a public good because of a greater ability, then that person is more likely to provide the public good (Diekmann 1993). Also, high status primates are more likely to intervene in others' conflicts than low status primates, because the former are less likely to get hurt doing so (Silk et al. 2004). We should predict that whenever possessing status results in a greater ability to help others at a lower personal cost, we should predict that high status people will provide more help (all else being equal).

Status Maintenance

We've discussed how prosocial behavior can be a means to increase one's status. Similarly, dispensing valued help can aid high status individuals maintain their

privilege. Group leaders who are insufficiently generous are often criticized by group members, which can lead to a loss of status (Boehm 1999). After all, subordinates will only follow a leader if they gain by doing so (Van Vugt 2006), so if a leader does not share then it will reduce others' willingness to follow him/her.

Noblesse oblige refers to a social norm obliging powerful people to act benevolently toward those less privileged. Fiddick et al. (2013) conducted a cross-cultural study investigating the noblesse oblige phenomenon. Their experiment asked participants to imagine themselves in a hypothetical carpooling arrangement between a (high status) factory boss and his (low status) employee in which one of the individuals was withholding the agreed-upon fuel contribution. Participants who were asked to the take the boss perspective were more tolerant of the noncompliance and more willing to continue the arrangement than those taking the employee perspective. Another study paired German children attending schools of varying levels of prestige for a "Dictator Game" (i.e., one person is given money and decides how much to share with a recipient). The naturally occurring status differences were highly predictive of generosity: the students of the highest status schools displayed noblesse oblige toward students of less prestigious schools; ingroup favoritism also occurred but was less evident in pairings with less pronounced status differences (Liebe and Tutic 2010; Fiddick et al. 2013).

Earlier we showed evidence that high status people were *less* generous (because their independence makes them less attentive to the needs of others). The noblesse oblige phenomenon involves *more* generosity (e.g., tolerance of noncompliance, financial donations) by high-status individuals, but only in situations where status differentials are clearly invoked. Once again, higher status people seem to be more discriminating helpers. That noblesse oblige serves a status maintenance function seems consistent with other anthropological findings. If this noblesse oblige only comes out when pre-existing status differentials are clearly invoked, then we should also predict that reactions to noblesse oblige will depend on how clear the status differentials are. People should resent it when others attempt to inappropriately display noblesse oblige if there is no clear pre-existing status differential, given that one person's gain in status is someone else's loss in relative status (Barclay 2013). Refusing others' generosity may be a strategy for resisting the unwarranted imposition of inferior status (Henrich et al. 2005; see also Nadler and Halabi 2006; Zahavi and Zahavi 1997).

Summary, Conclusions and Applications

We started with the question of whether prosociality affects social status, or vice versa. The evidence shows that the causation is bidirectional. Laboratory and field evidence both show that prosociality can be used to gain or maintain prestige, or to acquire the material and social capital necessary for status competition. Once acquired, possessing status then changes the costs and benefits for engaging in prosocial behavior, for example because possessing status will affect one's level of independence and vested interests in fellow group members, one's need for recip-

rocation from others, or one's ability to be prosocial. When we see how possessing status can increase some benefits of prosociality (e.g., by increasing vested interests) while reducing others (e.g., less dependence on others means less to gain from helping), it becomes clear that status will be positively associated with prosociality in some contexts and for some types of prosociality, yet negatively related with prosociality in other contexts. We should predict that when a particular type of benefit is particular salient in a given context, then it will carry more weight in terms of affecting behavior. We must also remember that there are many types of prosociality, each with different benefits, performance costs, and opportunity costs, so variables like status can affect them all differently (Barclay and Reeve 2012).

How can we use this knowledge? Two possibilities are immediately obvious. The first is to alter the cost-benefit ratio for prosocial behavior for all individuals, not just high status persons, as possessing status is just one way to affect costs and benefits. The second is to provide opportunities for people to gain a good reputation for prosocial behavior, as this increases prosociality. For example, we can use status motives to promote sustainable products and responsible consumerism. This will require greater visibility and branding of such products, and finding the fine balance between status symbols for the wealthy and products available to the most people possible. We may even try to incite competitive altruism by explicitly comparing the generosity of different individuals, giving the most recognition to the most generous individuals (e.g., expanding the *Slate 60* list of philanthropists), and allowing opportunities for the most generous individuals to selectively assort with each other. When status is based on prestige, we can demand noblesse oblige from those of high status as a condition of granting them prestige. There are of course risks and unknowns with harnessing the power of reputation (see Barclay 2011, 2012), and these require careful consideration and further study, but the possible gains are immense.

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Chapter 8
The Pursuit of Status: A Self-presentational Perspective on the Quest for Social Value

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Many theorists in psychology, sociology, anthropology, political science, and other disciplines have viewed social status as a fundamental feature of social life not only among human beings but among other social species as well. In fact, several perspectives view status as one of the two basic dimensions that characterize social behavior, personality, and interpersonal relationships (Leary 1957; Wiggins 2003).

Most research on status has examined the implications of high and low status for behavior, reactions of other people, interpersonal relationships, and various outcomes, starting at the point at which a person already has or does not have status (Anderson and Kilduff 2009; Fiske 2010; Fiske and Berdahl 2007). Some work has examined social and personal factors that predict whether people have low vs. high status, but far less attention has been devoted to how people who desire to have status pursue it. The focus of this chapter is on the ways in which people who wish to increase their status seek it in their interactions with other people.

Our analysis of the pursuit of status begins with a discussion of the nature of status and its social psychological underpinnings. We then discuss the central role that self-presentation plays in the pursuit of status, the primary ways in which people enhance their status self-presentationally, and the features of social situations that moderate the ways in which people manage their status-relevant public images. We then turn to the dilemma that people sometimes face in balancing status and acceptance and discuss reactions to having low status.

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The Nature of Social Status

Conceptualizations of status are as muddled as almost any in psychology. At various times, writers have conceptualized status as having power, being esteemed or respected by other people, ranking high in a status hierarchy or pecking order, having authority over other people, being dominant, or having prestige (Anderson and Kilduff 2009; Fiske 2010; Fiske and Berdahl 2007; Henrich and Gil-White 2001; Magee and Galinsky 2008). Although one can see the connections among these concepts, they are by no means the same thing. For example, a person may have power over others by virtue of possessing the capacity to harm or destroy them, yet those individuals would not necessarily consider such a diabolically powerful person to have high status. Similarly, high-ranking people are sometimes detested and their efforts resisted, so they lack esteem, respect, and even influence.

Part of the difficulty in conceptualizing status has arisen from the fact that social and behavioral scientists have approached status in quite different ways. Sociological perspectives have generally taken a structural approach in which status is regarded as a property that is conferred on people by virtue of their position in a social structure or hierarchy. Some people—such as those who are educated, wealthy, belong to certain racial or ethnic groups, or inhabit a formal position of authority—have greater status than those who are uneducated, poor, members of marginalized groups, or have no authority. In contrast, psychological perspectives have taken an interpersonal approach, asking why certain people in any group are accorded greater status than other people. Of course, structural factors provide part of the answer, but from a social psychological standpoint, status dynamics are assumed to play out in the interpersonal relations among people. Thus, status arises from an interaction of social context, relationship variables, and the individual's personality. As a result, a particular person might be accorded high status by certain members of a group but not by other members for reasons that have nothing to do with structural considerations.

Instrumental Social Value

In our view, the essential foundation of status lies in what we will call *instrumental social value* (or, more precisely, *perceived* instrumental social value). People are accorded status to the extent that others believe that they possess resources and/or personal characteristics that are important for the attainment of collective goals. People who, for whatever reason, are seen as promoting collective outcomes—and thus benefitting both the group as a whole and its individual members—are accorded greater status than people who are not seen as promoting collective outcomes to the same degree. Thus, status is not a property of an individual but rather a consequence of being perceived as having instrumental social value. A person may be perceived to have high value—and thus high status—in one group but low value and status in another. Nor is status a property of a particular position in a group or society because people who occupy what might appear to be a "high status" position might not, in fact, be

viewed by other people as providing valuable outcomes for the group. Such people might have a high rank or high power without high status. Even so, people who hold high status positions are often accorded higher status either because they earned their position by promoting collective outcomes or because mere possession of a high status position leads others to infer that the person possesses resources or characteristics that reflect instrumental social value, whether or not that is actually the case.

The unit of analysis for ascribing status can be as large as a society (even a global society) or as small as a dyad. People who are widely recognized as playing important roles in the affairs of a society often enjoy wide-ranging status. War heroes, highly effective political leaders (particularly in times of crisis), astronauts and other explorers, great scientists and inventors, and other luminaries are often accorded status wherever they go. To a lesser extent, people in so-called high status professions—such as being a physician or judge—are likewise accorded status because they are seen as being broadly important to society. In organizations, teams, and task-oriented groups, status is directly related to the degree to which members are perceived to contribute to collective outcomes. (And, again, this is only indirectly related to members' formal positions or titles.) Even in dyadic relationships—such as friendships and romantic relationships—one person may have more status than the other by virtue of playing a more important role in the dyads' positive outcomes. Although most people may wish their closest relationships to be free of status differences, many close relationships show status effects that are due to the relative instrumental social value of the two individuals.

Conceptualizing status in terms of instrumental social value helps to clarify the relationship between status and the concepts with which it has been confused. For example, status is not the same as power, influence, or authority even though people with higher status generally do have greater social power and influence. As we describe in detail momentarily, people may be seen as important to a collective cause for many reasons—by virtue of possessing important competencies and skills, owning important resources, displaying a high degree of effort and loyalty, and so on. Such people are viewed as having greater status—and given greater influence—because of an implicit norm indicating that people whose skills, resources, and personal characteristics benefit the group should be accorded greater respect and influence. Whether the high status person is an effective leader, the most skilled member of an athletic team, or the member of the local garage band who owns the band's equipment, norms dictate that those who benefit from the person's contributions accord him or her respect and influence.

In addition, some of the same characteristics and resources that confer status are also directly related to the person's ability to exert power. The rest of the band must obviously defer to the member who owns the equipment when decisions regarding practices and performances are being made; the possession of resources can give one status and power simultaneously. Likewise, when status is based on leadership effectiveness, as it often is in business organizations and military units, the person often reached a formal position of authority by virtue of the same traits that lead followers to accord him or her status. Thus, conceptualizing status in terms of perceived instrumental social value helps to explain the myriad factors that predict the emergence of status.

Relational Value

Instrumental social value must be distinguished from another form of positive social evaluation. *Relational value* refers to the degree to which a person regards his or her relationship with another individual as personally valuable and important (Leary 2001). People regard their many interpersonal relationships—with friends, family members, co-workers, acquaintances, romantic partners, or whoever—as differentially valuable. Some of our relationships are exceptionally valuable and important to us. We put a great deal of effort into these treasured relationships, are strongly affected by the good and bad fortunes of the people whose relationships we value, and are distressed when problems arise in those relationships or, worse, they come to an end. Other relationships are less valuable. Although we may enjoy certain relationships, we do not make a special effort to sustain them and would not be particularly troubled if they ended. Some of our relationships have no relational value whatsoever; although we may have an ongoing, interdependent connection with a person, we may not regard our relationship with him or her as important or valuable.

Relational value is based on the psychological and emotional importance of a relationship almost without regard for the person's instrumental usefulness in helping us to accomplish goals. Of course, friends, romantic partners, and family members—classes of people who generally have the greatest relational value—often provide positive tangible outcomes and help us achieve various goals and, thus, they may have instrumental value. Yet, our relationships with such people are usually not predicated on their ability to help us attain those goals. In fact, many people who have very high relational value—such as one's children—do not provide any instrumental outcomes and sometimes exact considerable personal costs.

Relational value and instrumental social value differ in several ways. First, they are based on different criteria. Relational value is based on personal socio-emotional importance; instrumental social value is based on the person's value in achieving collective outcomes. Second, their affective and evaluative concomitants differ. Whereas relational value is associated with liking, instrumental social value is associated with respect. Third, in most cases, people whom we relationally value are not easily interchangeable with others who could serve their instrumental functions, whereas someone with high instrumental value may be quickly replaced by another person who has the same instrumental characteristics or resources. And, finally, high and low relational value is relevant to the degree to which people are accepted vs. rejected, whereas high and low instrumental social value is relevant to the degree to which people have high versus low status.

The Interplay of Instrumental Social Value and Relational Value

The distinction between instrumental social value and relational value maps on to the interpersonal circumplex popularized by numerous social, personality, and clinical psychologists (Kiesler 1983; Leary 1957; Moskowitz 1994; Wiggins 1982).

Circumplex models specify that two fundamental dimensions underlie a number of social and psychological phenomena, including social relationships. These dimensions have been characterized in slightly different ways by various theories, yet they share a common theme. One dimension has been characterized in terms of status, dominance, control, or power, and the other has been characterized in terms of love, affection, affiliation, or warmth (see Kiesler 1983). From our standpoint, any social encounter or interpersonal relationship can be characterized in terms of the degree to which each individual is perceived as having instrumental social value (status, respect) and relational value (acceptance, liking).

According to Blau (1960), these two dimensions are fundamentally important because they reflect the two primary routes to social integration. People are attracted to those who facilitate collective goals (i.e., have high instrumental social value) on one hand and those who are warm, likeable, and personally responsive (high relational value) on the other. Thus, having either instrumental social value (status) or relational value (acceptance) increases the likelihood that a person will be sufficiently rewarding to be included in others' activities, groups, and other affairs. But, although they are both routes to social integration, the basis of status and acceptance are different.

Of the two dimensions, acceptance is arguably the more important overall because one's relational value to another person generally spans specific contexts and provides more broadly essential resources (such as companionship, support, and care) than status, which is usually tied to particular contexts and provides less vital outcomes. A person who was widely liked and accepted but who had low status would typically fare better in life overall than a highly respected person with high status who was not relationally valued, liked, or accepted by anyone. Of course, being both liked and respected usually provides greater benefits than either one alone, so people are inclined to pursue both acceptance and status.

The Centrality of Self-Presentation in the Pursuit of Status

As noted, we do not view status as either a property of a person or a position but rather as an inference that others draw or a social designation that they confer. Based on their judgments of an individual's contributions to collective outcomes—his or her instrumental social value—people accord the person a certain amount of status.

Status sometimes accrues without the person intending to accumulate it. As people contribute to collective outcomes, they may passively accrue status because of their instrumental social value. For example, a particularly fair-minded, judicious, and loyal group member may accrue status as other members come to recognize the important role that he or she plays in the group. Similarly, a particularly skilled member of an athletic team will gain status among other team members without making any special effort to do so.

At other times, however, people actively pursue status and purposefully engage in behaviors to show others that they possess characteristics or resources that entitle

them to status. For example, a group member may volunteer to do certain tasks or participate in group discussions specifically to gain status rather than to help the group per se. Similarly, a member of an athletic team may show off his or her skills in ways that may increase his or her perceived instrumental social value. A person may inform others of (or even lie about) characteristics or resources that have implications for his or her value to the group.

Given that people attain status only to the extent that other people believe that they have instrumental social value, people who desire to increase their status attend to how their value is perceived by others and occasionally try to convey impressions of themselves that will bolster it. As Blau (1960, p. 546) observed, "a person who is motivated to attain an integrated position in a group has strong incentives not simply to wait until others discover his good qualities but to exert effort to prove himself an attractive associate" (p. 546). Thus, the pursuit and maintenance of status necessarily require attention to one's image in the eyes of other people as well as occasional efforts to manage one's impressions with respect to instrumental social value.

Self-presentation—the intentional effort to control the impressions that other people have of an individual—has often been portrayed as a deceitful and manipulative effort to convey public images of oneself that one knows are not true, and sometimes it is (Buss and Briggs 1984). Yet, although people sometimes project public images that do not reflect how they see themselves, more often, they manage their impressions in order to show others that they possess certain characteristics that they actually do possess (Schlenker 1980, 2012). Just as advertisers accurately describe the properties of a product that might not otherwise be discernible by consumers ("…has half the calories of regular beer"), people often take steps to make their characteristics known. Because other people may not have information about them that would create the desired impression, people work to ensure that relevant personal information is public knowledge. Thus, self-presentations are often tactical, but they are not necessarily deceitful (Schlenker 2012).

As noted, people who wish to increase their status often monitor and control how they are viewed with respect to attributes that qualify and disqualify them for status. To consider the role that people's public images, and thus self-presentations, play in the pursuit of status, let us consider the image-relevant dimensions that are most relevant to status. The particular images that lead others to confer status on a person differ across groups and contexts, but a few broad dimensions underlie most instances in which people are viewed as having instrumental social value and, thus, status.

Competence

First, status is often based on judgments of the person's competence in domains that are important to the observer. No matter what domain of ability one might imagine, those who value competence in that domain will accord higher status to those who are particularly skilled than to those who are not. All other things being equal, more highly skilled athletes have higher status—both among teammates and fans—than those who are less skilled. Highly accomplished, widely published scientists have

higher status than less accomplished ones. Among gang members, more skilled fighters are accorded higher status than poor fighters, and so on. Experimental research clearly shows that people's beliefs about another person's competence predict the degree to which they believe that the person has high status (Anderson et al. 2012c)

In light of the importance of competence to status in many contexts, people who desire greater status not only want to possess relevant knowledge and skills but they also want to ensure that their skills and successes are known by others and that their shortcomings and failures remain hidden. Thus, self-presentations involving knowledge, competence, and skill—what Jones and Pittman (1982) referred to as "self-promotion"—figure prominently in the pursuit of status. No one who desired status would make a point of advertising his or her ineptitude in areas that were important to the audience.

An indirect route to being viewed as competent is to convey an air of confidence. Because competent people are, on average, more confident than less competent ones, observers sometimes use confidence as a proxy for competence (Areni and Sparks 2005; Price and Stone 2004). In fact, when people are induced to be overconfident, observers infer that they have higher status (Anderson et al. 2012c). Thus, people who speak more in group discussions, use a confident tone of voice, speak first, display a calm and confident demeanor, and provide more information that is relevant to the discussion are viewed as more confident and of higher status (Anderson et al. 2012c). In general, anxious, insecure, and introverted people are probably accorded less status because they are (unfairly) perceived to be less competent than calm, secure, outspoken people (Anderson et al. 2001).

This effect may be partly responsible for the relationship between dominance and status. More dominant people may tend to have greater status because they are viewed as more competent than less dominant people (Anderson and Kilduff 2009). For example, perceptions of status are influenced by nonverbal behaviors such as eye contact, initiating touch, and facial expressions that indicate confidence and dominance (Edinger and Patterson 1983; Hall et al. 2005). Evidence suggests that this pattern arises because people ascribe greater competence to dominant people.

Obtaining and Displaying Resources

Second, instrumental social value is higher for people who possess resources that promote desired collective outcomes. These resources may be almost anything that benefits—or might potentially benefit—other people. The family with the only swimming pool in the neighborhood accrues status from allowing neighbors to take a dip. The kids with the coolest toys and videogames derive status from sharing their playthings. The teenager with a car gains status over peers without one. Having money to spend on other people or to facilitate group outcomes can buy status. One study showed that people who contributed more money to a group were perceived as having higher status than people who contributed less. Not surprisingly, they were also more influential and engendered more cooperation on the part of other group members (Willer 2009).

Because possessing certain resources can help people attain status, people sometimes seek possessions explicitly to increase their perceived instrumental social value. Many such things are directly relevant to status because they provide benefits to other people or to groups. For example, certain personal possessions can directly benefit other people in one's groups. Owning a printing shop that can produce needed material for the group, having a large house where the group can meet, or owning other possessions that facilitate the group's goals can increase status.

Other status-enhancing possessions do not benefit other people directly, but they demonstrate that the person possesses resources that might benefit others in the future. The mere possession of money or luxury possessions may not have instrumental value to others at the present time, yet people who display signs of wealth often have status because they have the potential to benefit others. People appear to be willing to accord wealthy people a certain amount of status as an investment toward the possibility of attaining desired outcomes from them in the future. As a result, people who foster the image of having instrumental social value may not actually behave in ways that provide instrumental social value.

Along these lines, Van Vugt and Hardy (2010) demonstrated that, even when people's contributions to a public good were not actually useful, people gave more when their contributions were public than private, presumably to be viewed as the kind of person who could have instrumental social value when needed. Furthermore, observers rated those who contributed more as having higher status and influence even when their contribution was not actually useful to the group. The link between being seen as having the potential for instrumental social value and being accorded status helps to explain why people sometimes display their wealth and engage in conspicuous consumption.

Promoting Collective Goals

Third, people can increase their status by directly benefitting groups and their members. For example, people increase status by serving on the boards of universities, nonprofit agencies, and community groups; organizing events; volunteering for tasks; sacrificing their time; donating money; tutoring or helping others. Directly helping a group to achieve its goals contributes to perceived instrumental social value in two ways. First, it promotes collective outcomes, thus benefitting the group and its members, which by definition is the crux of instrumental social value. In addition, performing duties on behalf of the group demonstrates that one is a loyal group member who devotes effort on behalf of the group (to be discussed below).

Not surprisingly, members who feel peripheral in a group try to demonstrate their instrumental social value in public ways rather than helping in private ways that are not known by other group members (Okimoto and Wrzesniewski 2012). People who are marginal group members are less likely to volunteer for the good of the group if their efforts will not be made known to the group than if their efforts will be known publicly. Thus, peripheral group members' self-presentational concerns manifest primarily in public contexts in which they can demonstrate their

social instrumental value to fellow group members by promoting the collective goals of the group.

Likewise, leaders who more effectively address the needs of other people foster perceptions of competence and credibility, enhance trust, and gain power (Blass and Ferris 2007). In addition to the specific knowledge and skills required to promote collective goals, people who possess "political skill" (e.g., social astuteness, behavioral flexibility, adaptability) more effectively address a variety of individual needs and promote individual and group goal accomplishment. Thus, political skill may contribute to perceptions of status both because it is valued by others in its own right and because the politically astute leader is able to discern how to facilitate the attainment of group goals and promote his or her instrumental social value.

Effort, Sacrifice, and Loyalty

Fourth, status is facilitated by indications that the person is a loyal and devoted group member who has the best interests of the group at heart and will occasionally sacrifice his or her personal interests for the benefit of the group or relationship. People who work especially hard for the group are accorded higher status than those who do not. Although a competent group member will usually have higher status than an incompetent one, the status of both more and less competent members will be augmented by indications that they are loyal and devoted members who work hard and are interested chiefly in the common good. For that reason, employees who put extra effort into their jobs are often accorded higher status (Allen and Rush 1998; Podsakoff and MacKenzie 1997).

Because perceived effort, sacrifice, and loyalty enhance status, not only do people who seek status put a great deal of effort toward group affairs, but they also work to be sure that others are aware of how much time and effort they invest. For example, employees have been known to delay leaving work until most of their co-workers have gone home. Trying to always appear busy with work, talking about working extra hours (overtime, on weekends), and volunteering to take on additional tasks increase perceived instrumental social value and status. Jones and Pittman (1982) refer to such self-presentational tactics as instances of exemplification.

Trappings and Signals of Social Status

A final way in which people pursue status self-presentationally is by displaying symbols that connote status. People who have high status often possess certain objects that are associated with high status roles (such as larger offices, membership in exclusive groups) or that are the fruits of having high social instrumental value (such as nicer houses, cars, and clothing), and may use those possessions as a means to symbolize their achievements (Richins and Dawson 1992). Because status is associated with such possessions, people can lead others to infer that they have status by displaying these status cues (Carr and Vignoles 2011; Leary 1995).

In an analysis of tactics for increasing one's power in work organizations, Korda (1975) described how employees increase their apparent status through their choices of clothing, office furniture, work-related artifacts, and workplace behaviors. For example, people are known to enhance their apparent importance at work by walking in a purposeful manner (even if they are only going to the water cooler), displaying multiple clocks that display the time in cities around the world (to imply that their work activities span the globe), always carrying a folder as they walk around their workplace (to show that they are on-task rather than wasting time), and communicating in a direct, sophisticated, confident manner (to connote authority and intelligence) (Fiske 2010; Korda 1975). In each case, the goal is to convey the impression that one has high instrumental value which, if believed by others, may enhance one's status and power within the organization.

Similarly, in personal life, people can appear to be important (i.e., to have instrumental social value) through an array of self-presentations. In addition to the use of possessions that connote status as discussed earlier, people foster images of being important through what they say about themselves. When people talk about their skills, knowledge, and accomplishments, they are often trying to increase others' judgments of their instrumental social value and status. Of course, people rarely make explicit claims that they are important, instrumentally valuable people. Rather, they do so off-handedly by mentioning their roles, responsibilities, competencies, and experiences in the course of ordinary conversations. People may even embed their instrumental value within an otherwise mundane or even deprecating self-disclosure, a tactic that has become known as "humblebragging" ("I stupidly forgot to set my alarm clock and almost missed my meeting with the Governor") (Alford 2012). Likewise, when people share gossip, they are often trying to demonstrate their instrumental social value by providing inside information about third parties (McAndrew and Milenkovic 2002).

Avoiding Status

Of course, most people do not go through life consistently trying to bolster their status, and some people may show little interest in status whatsoever. In one study, over 65 % of participants did not want the highest status rank in a group (Anderson et al. 2012b).

Despite its benefits, having high status is associated with a variety of costs. Rarely is status itself problematic, but the attainment and maintenance of status can be accompanied by undesired outcomes. As will be discussed, efforts to attain status may undermine liking and acceptance, partly because people who want status may focus on "getting ahead" rather than "getting along." Moreover, norms may preclude high status people from forming friendships with lower status people, particularly within organizations or in instances in which the higher status person has authority over the lower status one. In such cases, high status can interfere with people's desire for social inclusion. Also, higher status often brings weightier responsibilities, more work, and thus more stress. For these and other reasons, people sometimes manage their impressions in ways that attenuate their status.

Situational Moderators of Tactics for Pursuing Status

To be effective, all self-presentations must be tailored to the specific social context and the characteristics of the target individuals whose impressions one is hoping to influence. Public images that would achieve one's goals in one situation or with respect to one audience may produce disastrous results when used in other situations or with other audiences. In this section, we explore features of situations and audiences that moderate the effectiveness of self-presentational efforts to attain status.

Target Preferences

As we have seen, people who are motivated to pursue status must convey that they possess attributes that lead to desired outcomes for a group and its members. We have already noted that competence, the possession of material and financial resources that help the group, the willingness to assist others, and displays of effort and loyalty are important in increasing status. Of course, the specific competencies, resources, assistance, and efforts that benefit a group differ greatly across groups and roles. Being good in hand-to-hand fighting would probably enhance the status of a gang member or Marine but not that of a priest or premier ballerina.

   Because the specific public images that promote status differ across audiences, people are sometimes caught in a multiple audience situation in which they interact simultaneously with two or more audiences that view the bases of instrumental social value differently (Leary and Allen 2011). Middle managers sometimes get caught in such situations because the instrumental behaviors that increase their status in eyes of subordinates are different from those that increase their status in the eyes of their superiors. Likewise, politicians face multiple audience problems as they try to promote their status to groups of voters who want them to pursue different actions. Presidential candidate Mitt Romney's claim that 47 % of Americans do not take personal responsibility for their lives probably increased his status in the eyes of many of those who attended the private fund-raising event at which he spoke but lowered his status among many others when it was leaked to the press.

Task Demands, Roles, and Norms

The attributes that are associated with instrumental social value depend, in part, on the demands of the current situation. Those who wish to gain or retain status must promote their instrumental social value in different ways depending on what the group values at a particular time.

   In one study, participants who were assigned to be the leader of a laboratory group changed how they presented themselves to other group members depending on the nature of the task that the group faced (Leary et al. 1986). Leaders described themselves to group members as more task-oriented when they were told that a

task-oriented leader would be most effective (i.e., of greater instrumental value to the group), whereas leaders who were led to believe that a relationship-oriented leader would be most effective described themselves in more relationship-oriented terms.

The role in which a person finds him- or herself also impels certain self-presentations. Most roles carry with them expectations, if not prescriptions, regarding the kinds of images that those who inhabit those roles must maintain (Leary 1995). Failure to maintain a public image that is prescribed for a role may result in loss of status, diminish one's effectiveness in the role, or compromise one's right to exercise the role altogether. Interestingly, observers may recognize that these role-based images are not a strictly accurate or authentic representation of the person's characteristics and that the images are not necessarily an essential aspect of the role. Yet, people in the role must convey the appropriate image in order to maintain or enhance their status.

For example, most people who regularly face danger in the course of their jobs—such as police officers, fire fighters, and many members of the military—are not as confident and calm in the face of danger as their visage may suggest. And everyone realizes that, as normal human beings, people in these roles are sometimes uncertain and afraid. Yet, to openly display uncertainty or fear to the public would likely result in a loss of status because, from the public's standpoint, the instrumental social value of an uncertain or fearful police officer, fire fighter, or soldier is arguably lower than that a confident and fearless one. Thus, role demands require that people in such fields maintain a public image of confidence, fearlessness, and strength no matter how they may actually feel. Similarly, everyone knows that teachers sometimes become fed-up with their students, but a teacher who fails to maintain an image of imperturbability by screaming at students or complaining to parents will suffer a loss of status.

However, people often forego certain role-based self-presentations when with others who also occupy the role, with no loss of status. Police officers may share their fears with other cops, teachers complain vociferously about students among themselves, and ministers are known to act up when they are alone with other members of the clergy. Employing a dramaturgical metaphor, Goffman (1959) observed that a person who is "backstage" with others who share the role can "drop his front, forego speaking his lines, and step out of character" (p. 112). Observing the role-inappropriate and often regressive behaviors that occur in backstage areas shows how much of people's role-based behaviors are maintained by self-presentational pressures to convey an image appropriate to one's role.

Informational Constraints

Norms dictate that people are who and what they claim to be, and people who misrepresent their personal characteristics lose face and are sometimes negatively sanctioned (Goffman 1959; Schlenker 1980). Thus, people are constrained in the images that they can present to others by what others know or might find out about them.

In established groups and relationships, people are often limited in the images that they can reasonably claim because others have information about their abilities, characteristics, resources, and personal history based on both direct observation of their actions and reputational information, including gossip. Thus, people who desire to increase their status may have more difficulty pursuing it self-presentationally—as opposed to behaving in ways that demonstrably have instrumental value—when others have information about them. People know this, of course. Research shows that people avoid presenting public images that they cannot sustain because other people have information that would discredit the image (Baumeister and Jones 1978; Schlenker 1975). For example, people avoid accepting a high status ranking if they believe that their fellow group members will be informed about their ostensible poor performance on a previous activity (Anderson et al. 2012b). In such situations, people must demonstrate their instrumental social value directly through actions that benefit the group rather than simply through self-presentational posturing.

Balancing Status and Acceptance

As noted, people gain positive outcomes both by being liked (and accepted) and by being respected (and having status). However, in their everyday lives, people sometimes conflate acceptance and status and erroneously use tactics to seek status that are actually more appropriate for seeking acceptance, and vice versa. For example, in many instances in which people attempt to impress casual acquaintances with their skills, knowledge, and accomplishments, they are using self-presentations that are relevant to status when, in fact, they are trying to be liked and accepted. Similarly, people who try to increase their relational value by being successful or working hard may become hurt or disappointed when such efforts do not automatically endear other people to them. Such actions may increase relational value (and acceptance) at times, but they are more relevant to status than to acceptance.

Conversely, people may try to increase their status by being likeable people with high relational value. In work groups, for example, people may try to increase status and respect through behaviors that are more relevant to acceptance and liking; such behaviors may win friends and affection without affecting status. The tension between status and acceptance is also seen when successful people who are widely respected for their accomplishments nonetheless question whether anyone actually likes or cares about them. Successful actors and actresses, athletes, models, musicians, and other celebrities sometimes wonder whether their fame says anything about how people feel about them as a person. Although it is certainly rewarding to be admired for one's appearance, talent, or accomplishments, the public's adoration is often based on the person's instrumental social value and says nothing about his or her relational value.

People's efforts to seek status are further complicated by the fact that some of the criteria for winning status clash with those for attaining acceptance. In an early

analysis of this issue, Blau (1960) suggested that an inverse relationship exists between obtaining respect versus affection from other people. Along these lines, one study in which people interacted in small groups over 4 weeks found that people who enhanced their status were less socially accepted by other group members than those who did not enhance their status (Anderson et al. 2006). Such effects may occur because certain self-presentational tactics for gaining status, such as touting characteristics or resources that reflect one's social instrumental value, may appear highly self-promoting (which they are), and convey that one is superior to other people in certain respects, generate competitiveness with other group members, or evoke envy. Such reactions may undermine the person's perceived relational value, along with liking and acceptance.

The classic "pratfall" study by Aronson et al. (1966) may also be an example of this effect. Aronson et al. showed that a highly competent individual was liked better if he made a mistake (spilling coffee on himself) than if he did not. The canonical explanation of the pratfall effect suggests that being seen as fallible makes highly competent people seem more human, approachable, and likeable, which is certainly true. Yet, this study also reflects the trade-off between acceptance and status. The competent person was liked less than the mediocre one unless the competent one performed a clumsy, humanizing behavior. Thus, competence, which presumably confers status, appeared to undermine liking in this instance.

Thus, people who desire both status and acceptance from the same audience sometimes face a dilemma, and people seem to know this. In fact, the more that people want to be accepted, the more they underestimate their status in their own mind (Anderson et al. 2006). This finding again suggests that people recognize a trade-off between social acceptance and social status and that people's desire for acceptance and belonging can sometimes attenuate their desire for status.

An early study by Jones et al. (1963) demonstrated one version of the status-acceptance dilemma and its resolution. Pairs of low- and high-status ROTC cadets were instructed to exchange information about themselves. Half of the participants were told to convey accurate information, and half were told to try to get the other person to like them. When instructed to get the low-status cadet to like them, high-status cadets became more modest in their self-presentations, particularly on unimportant attributes. In this way, they could appear likeable and approachable without undermining the positive image needed to maintain status. Low-status cadets, on the other hand, became more self-enhancing on unimportant attributes when they were trying to get the high-status cadet to like them. This tactic allowed them to make a positive impression without the risk of appearing self-aggrandizing or seeming to seek greater status.

Of course, people differ in the degree to which they value status versus acceptance and thus approach the status-acceptance trade-off differently. One case in point involves narcissism. The core features of narcissism involve a grandiose self-image, coupled with the belief that one is entitled to special treatment by virtue of one's specialness, and research suggests that people who score high in narcissism are also particularly motivated to seek status (Raskin et al. 1991; Vangelisti et al. 1990). In fact, much of the interpersonal behavior of people who are high in narcis-

sism seems designed to lead others to recognize their social value and importance. For example, they seek excessive recognition for their accomplishments, fantasize about fame and glory, are motivated to be dominant and powerful, have a strong desire to be recognized for their agentic characteristics, and are focused on status and power (see Campbell et al. 2006, for a review). At the same time, people high in narcissism appear far less concerned with relational value that is based on being a likeable, communal person (Campbell et al. 2002). In fact, they regularly behave in ways that are abrasive and off-putting, if not insensitive and offensive. The self-presentations of narcissists seem specifically designed to promote their status. And, their self-presentational efforts to achieve status are not tempered by a normal concern about being liked, which helps to account for why other people are often irritated by their interpersonal style.

Whereas people high in narcissism emphasize status and deemphasize acceptance, people who score high in approval motivation are often caught in a status-acceptance dilemma when they wish to increase their status. Unlike the narcissist who single-mindedly pursues status even at the price of garnering disapproval, people who are high in approval motivation seek status in ways that are unlikely to jeopardize the degree to which they are liked and accepted (Grams and Rogers 1990).

One way in which people can achieve this balance is to demonstrate their instrumental social value in terms of relational and communal outcomes. People can contribute to collective outcomes not only through their competence and provision of material resources but also by fostering positive relationships among group members. Not only do people enjoy memberships in groups in which they have positive relationships but cohesive groups tend to perform better than noncohesive, conflicted ones (Anderson et al. 2006). Thus, people who foster a positive group climate often have instrumental social value. Because those who promote positive relationships are usually viewed as warm and likeable people, people who desire social approval can attain both status and approval by being relational experts within a group. People who prefer relationship-oriented leadership styles (Fiedler 1978) may fall in this category. The downside of this tactic is that contributing to collective outcomes relationally may be both less valued and more difficult to detect than contributing directly to group performance. As a result, group members whose instrumental social value is based on relational behaviors may have lower status than those whose value is based on direct and observable contributions to group outcomes.

Although a tension sometimes exists between efforts to seek status and acceptance, they sometimes work in concert. For instance, some qualities, such as social skill and charisma, increase perceptions of influence, innovation, credibility, responsibility for success, and effectiveness (thereby contributing to perceived instrumental value and status), while also increasing perceptions of trustworthiness and warmth, thereby enhancing relational value and acceptance (Gardner and Avolio 1998). For example, being seen as someone who donates large amounts of money to charities might convey the impression of being a nice person (with an increase in relational value and liking) as well as being a person with resources that could facilitate collective outcomes (with an increase in instrumental social value and

status). In addition, people seem to value having personal relationships with those who have high status, even if the high status person's instrumental social value is irrelevant to his or her personal relationships. All other things being equal, people seem to prefer that their friends, acquaintances, partners, and family members have high rather than low status in other people's eyes. Thus, high status can promote one's relational value even when it is irrelevant.

Reactions to Having Low Acceptance Versus Low Status

Because acceptance was vital to survival throughout human evolution, people appear to possess a designated system for monitoring the environment for signs of acceptance and rejection (Leary et al. 1995). This sociometer responds to indications of low or declining relational value by alerting people to the possibility of rejection and motivating behaviors that deal with the threat (for a review, see Leary 2006). People respond quickly and strongly to exceptionally minor indications of rejection, even when the rejection has no meaningful consequences (MacDonald and Leary 2005; Williams and Zadro 2005). The question arises of whether people also possess a comparable system for monitoring status. Although some theorists have proposed the existence of such a system (see Barkow 1980), much less attention has been devoted to how people monitor and react to status than to acceptance. Thus, our thoughts on this question are admittedly speculative.

Undoubtedly, people are sometimes attuned to status concerns and may react emotionally to indications that they do not have as much status as they desire. Having high status is associated with greater positive affect than low status, and people may react strongly when they believe that others have not accorded them the status they deserve (Anderson et al. 2012a). However, having low status does not appear to evoke strong reactions across the number and variety of situations as does being rejected. People are rarely indifferent to being relationally devalued and respond emotionally to signs of disinterest, avoidance, rejection, or ostracism even under conditions of zero-acquaintance and even when the rejector belongs to a despised outgroup (Bourgeois and Leary 2001; Gonsalkorale and Williams 2007; Leary et al. 1995; Snapp and Leary 2001; Williams and Zadro 2005). People act as if they should be relationally valued and accepted by virtually everyone they meet. In contrast, people spend much of their daily lives in contexts in which their instrumental social value (and, thus, status) is low, but they do not appear to have strong reactions to most of these situations. Rather, people generally react to having low status primarily when they believe that they are not being accorded the status they deserve by virtue of their self-perceived instrumental value.

We also speculate that acceptance can buffer the effects of low status more effectively than high status can buffer low acceptance. Compare two individuals: Person A perceives that he or she is regarded as valuable to his or her groups (i.e., instrumental social value and status are very high) but that no one values

having a relationship with him or her on a personal level (i.e., his or her relational value is near zero, and he or she is chronically rejected outside of the contexts in which he or she has instrumental value). In contrast, Person B perceives that he or she is not especially valuable to the groups to which he or she belongs (i.e., instrumental social value and status are low) but believes that many people value their personal relationships with him or her a great deal (i.e., relational value is high). Our hunch is that Person A—the one with high status but low acceptance—would likely experience stronger reactions and potentially more psychological problems than Person B, who enjoys broad acceptance despite not having high instrumental value. Although both acceptance and status confer benefits, deficits in acceptance may have stronger negative consequences than comparable deficits in status.

Conclusions

People establish most of their connections with other people through one of two routes—by having high relational value as interaction and relationship partners, and by having high instrumental social value as members of dyads and groups. Much has been written about how people pursue relational value in order to be accepted by others (Baumeister and Leary 1995; Leary 2001), but far less attention has been paid to how people seek instrumental social value in order to have status (Fiske 2010). People often accrue status in the eyes of other people automatically as they behave in ways that others regard as having instrumental value for collective concerns. However, people often make a concerted effort to maintain or enhance their status through an array of self-presentational tactics. Sometimes, status-oriented self-presentations are inaccurate or duplicitous, but more often, they are honest efforts to demonstrate that one possesses characteristics or resources that are relevant to one's ability to contribute to collective outcomes.

To understand more fully the ways in which people pursue status (and balance those efforts against their desire to be accepted), research needs to examine lay people's beliefs about the nature of their connections with other people. We get the sense that most people have a rather vague, if not mistaken, understanding of the difference between being liked and being respected, between being accepted and having status, and between being valued as a relational partner and being valued because of one's instrumental contributions to a collective goal. As a result, they do not facilitate their connections to other people as successfully as they could and, in fact, sometimes mismanage, if not jeopardize, important social relationships. Research on people's reasons for wanting acceptance and status, beliefs about the reasons that other people like and respect them, and understanding of how to behave in ways that convey relevant information to other people will lead to more fully developed theories regarding the pursuit of status.

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Chapter 9
The Roots and Fruits of Social Status in Small-Scale Human Societies

Christopher von Rueden

Introduction

Since humans have lived in small-scale societies for the majority of their existence, investigation of the determinants and reproductive outcomes of status acquisition in these societies can help elucidate the origins of status psychology. In this chapter, I argue that in even the most egalitarian foragers and horticulturalists, interindividual differences in physical size, production skill, generosity, or social support produce disparity in men's political influence and mating opportunity. The reproductive advantages of status not only include higher fertility from privileged access to marriage partners and extramarital affairs but also better survival of offspring. These benefits to status in small-scale societies have become more apparent over the past several decades, as quantitative ethnography has challenged prior conceptions about the extent of human egalitarianism.

Small-scale societies have often been caricatured to suit particular political philosophies. In *Leviathan* (1651), Thomas Hobbes described the lives of humans without formal government as "nasty, brutish, and short". He contrasted human nature with the harmonious behavior of bees and ants: "men are continually in competition for Honour and Dignity, which these creatures are not". Anthropologist Lewis Henry Morgan countered the Hobbesian view, claiming that many hunter-gatherer societies are noncompetitive and nonhierarchical to the point that even spouses are communally shared (1877). Friedrich Engels was happy to agree, writing that hunter-gatherer societies exhibit a primitive communism (1884). In the 1960s, nomadic hunter-gatherers were declared the "original, affluent society" (Sahlins 1968), based in part on the egalitarianism and short working day observed by Richard Lee among the !Kung of the Kalahari (1968). In academia and in the public eye, the !Kung were heralded as a foil to the conflict, capitalism, and social injustices of the Vietnam War era.

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The Dobe !Kung of the 1960s certainly were one of the most egalitarian societies studied by anthropologists, but in no small-scale society do children and women have equal status, on average, with adult men. Formal political influence of women across societies is rare, due to subjugation, the sexual division of labor (including care of multiple dependents), and sex differences in coalition-building (Low 1992). By "egalitarian", anthropologists generally mean equal rights and privileges among adult men. In his comparison of human political systems, Fried (1967) argued that in most small-scale societies lacking formalized hierarchy, men may be able to coerce women and children, but adult male status is neither differentially ascribed nor achieved through competition. Based on his reading of the existing ethnographies, Fried famously wrote of egalitarian societies: "there are as many positions of prestige in any given age-sex grade as there are persons capable of filling them." (p. 33). According to Fried and others (e.g. Knauft 1991), differences in strength, skill, or knowledge do not typically cause certain men in these societies to gain greater favor or deference from group members.

Both ecological and institutional forces help maintain the egalitarianism common to many hunter-gatherer societies. In the absence of storable or predictable food packages, widespread resource sharing emerges to buffer risk in production and creates interdependence among families (Cashdan 1980; Winterhalder 1986; Wiessner 1996; Kaplan and Gurven 2005). In some societies, such as the Ache of Paraguay and Hadza of Tanzania, it was often taboo for hunters to consume portions of their own kills (Clastres 1972; Woodburn 1982). To express commitment to food sharing, individuals criticize those who brag and successful hunters deprecate their own achievements (Lee 1969). Humility is not optional but is normative. There are also checks on individuals acquiring coercive influence over others. Coalitions of subordinates will ostracize or, more rarely, execute individuals who display aggrandizing behavior (Boehm 1999). These leveling coalitions (i.e. coalitions in which all partners rank below the target of aggression) are sometimes observed in nonhuman primates (Pandit and van Schaik 2003), but in comparison with small-scale human societies they are generally risky, of small size, less effective, and short-lived (Boehm 1999). Additionally, communities within egalitarian societies often exhibit fluid membership, preventing larger kin groups from dominating other community residents, who can "vote with their feet" in the face of oppression (Knauft 1991). Since the major input into production in most hunter-gatherer societies is voluntary skilled labor rather than monopolizable material resources or land, the opportunities for coercion are limited (Boone 1992; Kaplan et al. 2009).

However, egalitarianism does not preclude hierarchy among adult men. Boehm (1999) has described small-scale, egalitarian societies as "reverse dominance hierarchies" where those who would be dominant have the least power relative to the subordinates allied against them. But this description is misleading. The ability of certain men to dominate others via greater physical size or coalitional support may be limited or suppressed, but status-leveling is better characterized as "counter-dominant" behavior than an actual reversal in hierarchy (Erdal and Whiten 1994). Furthermore, the focus on dominance ignores prestige as an alternate route to social status. Status hierarchies result from both the relative power of individuals to inflict

costs (i.e. dominance) and to confer benefits (i.e. prestige) on other group members (Russell 1938; Hamilton 1976; Henrich and Gil-White 2001; see Cheng and Tracy, Chap. 1, this volume). Group members acquiesce to higher-status individuals because they believe they will avoid harm and/or gain some benefit from their deference. For example, dominance and prestige jointly promoted increased social influence among North American undergraduates interacting in a lab (Cheng et al. 2013). Humans have greater scope for prestige-based hierarchies due to their extensive sharing of food, information, and labor (Kaplan and Gurven 2005) and the technology and material wealth made available by cumulative cultural evolution, i.e., learned improvements that accumulate across generations (Boyd and Richerson 1996; Tomasello 1999).

In this chapter, I argue that status hierarchy among adult men is a human universal, found even in highly egalitarian societies with widespread food-sharing and status-leveling norms. I then evaluate (1) the determinants and (2) the reproductive consequences of male status acquisition in relatively egalitarian, small-scale foragers and horticulturalists. Forager and horticultural political systems vary tremendously, but the modal pattern of their social organization is much more egalitarian and devoid of material wealth inequality compared to pastoralists and agriculturalists (Borgerhoff Mulder et al. 2009). Most horticulturalists are best described as forager-horticulturalists because they tend to supplement their small-scale agricultural production with hunting and gathering. A minority of foragers from the ethnographic record possessed intergenerationally transmitted social class distinctions among adult men (e.g. Kwakiutl of the Pacific Northwest), and many island horticulturalists from Oceania are similarly stratified (e.g. residents of the Trobriand Islands off New Guinea). In this chapter, I also summarize ecological and institutional forces that contributed to the emergence of stratified human societies.

Status Hierarchy is a Human Universal

Social status can mean different things. Status is ego-centric when it changes from dyad to dyad, e.g. "father", and is socio-centric when it is independent of context, e.g., Roman Catholic "Father" (Service 1962). The common usage of social status invokes its socio-centric meaning and refers to an individual's relative access to contested resources within their social group (Weber 1922; Davis and Moore 1945; van den Berghe 1978). These resources include material goods, knowledge, and the deference or favor of peers and potential sexual partners. Social status has meaning only when the allotment of contested resources is somewhat stable. If individuals have to fight over contested resources with every social encounter, there is no status hierarchy, only moment-to-moment winners and losers. Hierarchies represent agreements, maintained by deference signals, to facilitate exchange or to avoid the costs of repeated contest competition, as modeled by the war of attrition (Maynard Smith and Price 1973).

In small-scale societies, status hierarchy is most salient with respect to political influence. Service (1975) describes the self-effacing, "first among equals" role of leaders in small-scale societies, who lack coercive authority but act as arbitrators of conflicts and who have differential influence over their peer's opinions and the group consensus-seeking process. Of the !Kung, Shostak (1981) writes:

> Each group has individuals whose opinions carry more weight than those of others—because of age, of having ancestors who have lived in the area longer, or of personal attributes such as intelligence, knowledge, or charisma. These people tend to be more prominent in group discussions, to make their opinions known and their suggestions clear, and to articulate the consensus once it is determined. Despite their lack of formal authority, they function very much as group leaders. (p. 245)

Across foragers, leadership typically emerges when multiple households must coordinate foraging and camp moves. When the Yahgan of Tierra del Fuego congregated to feast on whale, a leader emerged who coordinated the proceedings and appointed a constable to enforce order (Gusinde 1937); whaling among Inuit off the Alaskan coast required coordination among a crew overseen by a captain (Spencer 1959); and Iglulik Inuit in northern Canada identified a leader who instigated camps moves, decided when group hunts were to be started, and who oversaw the division of spoils (Weyer 1932). Leadership is also potentiated by warfare: 74 % of foragers in the Standard Cross-Cultural Sample show informal leadership during war (Hooper et al. 2010).

With their influence, informal leaders can occasionally steer outcomes of collective action to favor themselves, their allies, or their kin. Betzig (1986) provides examples from small-scale societies where members of powerful coalitions differentially benefit from arbitration of conflicts (e.g. Copper Inuit: Jenness 1922).

The Determinants of Social Status in Small-Scale Foraging and Horticultural Societies

Social status is granted to those individuals widely perceived as best able to inflict costs or confer benefits on others (Henrich and Gil-White 2001). Attempts to influence these judgments of dominance or prestige often take the form of conspicuous consumption (Bourdieu 1984; Veblen 1899) or public displays of strength, skill, and generosity (Harbaugh 1998; Roberts 1998). Status acquisition strategies need not be consciously motivated; they calculate the expected gains in status based on such factors as the opportunity costs and the expected strategies of conspecifics.

I subdivide status-conferring traits into embodied, material, and relational capital. Embodied capital refers to wealth that is stored as tissue in the body, such as muscle mass or neural tissue (Kaplan 1996). In a functional sense, embodied capital may include strength, health, personality, intelligence, and knowledge. Material capital refers to tangible assets external to the body, which include land, shelter, food, tools, etc. Relational capital refers to an individual's network of social partners (Lin 1999) that includes mates, relatives, friends, followers, or cooperative
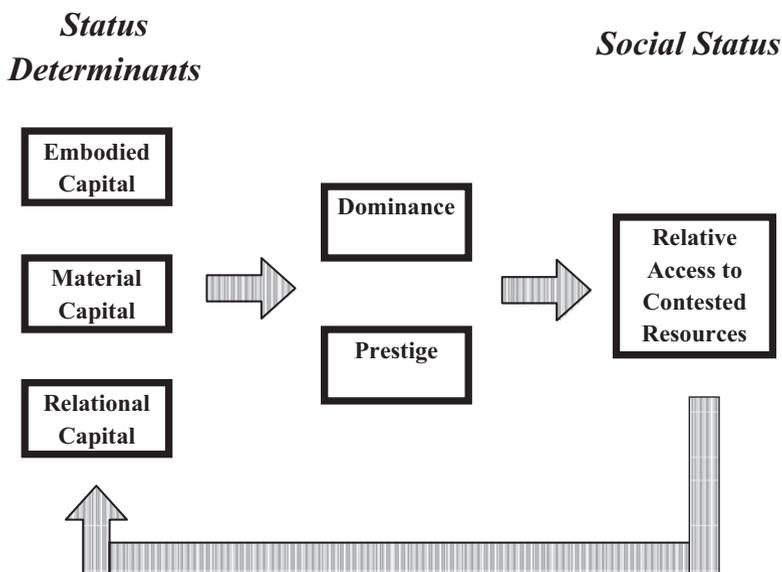
Fig. 9.1 Status and its determinants

partners. Changes in status may then feedback on individuals' wealth in these three types of capital (see Fig. 9.1).

The traits that possess the greatest utility for imposing costs or conferring benefits on others in a particular population should best correlate with social status. Size, strength, and skill in physical combat are components of embodied capital that are valued in leaders of Amazonian societies with histories of intergroup raiding, such as the Mekranoti (Werner 1982), the Xavante (Maybury-Lewis 1974), the Yanomamo (Chagnon 1983), and the Achuar (Patton 2000). However, even in small-scale societies lacking warfare or a warrior culture, influential individuals are often taller and stronger than their peers, as among the Tsimane forager-horticulturalists of Bolivia (von Rueden et al. 2008). Dominant individuals can facilitate collective action in food production or camp moves, by more easily capturing the joint attention of group members and by discouraging defection. A responsibility that often falls to influential individuals among the Tsimane and in other small-scale societies is dispute resolution (von Rueden 2011), and dominant individuals can be more persuasive as arbitrators. Height and muscle mass also signal health, attractiveness, athletic performance, and resource production, which will all increase the value of an individual to potential mates or coalition partners. Dominance can be difficult to disentangle from prestige.

Hunting prowess is the archetypal male skill in foraging societies and is a ubiquitous correlate with social status (Gurven and von Rueden 2006; Smith 2004; Wiessner 1996). Good hunters who generously share meat signal not only their production skill but also their cooperative intent (Frank 1988; Gintis et al. 2001)

and phenotypic quality as a mating partner (Hawkes et al. 2001a; Bird and Smith 2005). Generous meat-sharing is likely to vary as a source of prestige, depending in part upon the level of group-wide sharing and the opportunity to recruit additional political allies or mates through gift giving (Patton 2005). Since the gains to generous meat-sharing can spur competition over who is the most generous, many societies implement norms to prevent conflict over the signaling of prestige via meat distribution. Among the !Kung, delineation of large game carcass ownership is usually attributed to the arrow owner irrespective of who actually killed the animal (Dowling 1968).

Other elements of embodied capital important to status acquisition include expert knowledge of healing or supernatural forces. Spiritual healing among the !Kung is practiced by approximately half of men and a third of women (Shostak 1981) while in less egalitarian small-scale societies, shamans tend to monopolize healing power. In some Amazonian societies, the village headman is also the shaman (e.g. Tapirape: Wagley 1977), while in others these roles are filled by different individuals (e.g. Pemon of Venezuela: Thomas 1982). Oratory skill is typically requisite for gaining political influence within a community, as has been noted with the !Kung (Lee 1969) and the Semai of Malaysia (Dentan 1979). Rhetoric is perhaps most useful to aspiring leaders as a means of shaping the degree to which they are perceived as sharing a common identity with group members.

Since material capital is relatively absent and is traditionally unimportant to production in many small-scale societies, it is not as frequently associated with status as is embodied capital. For example, Mekranoti chiefs of Brazil do not differ significantly from their peers in the number of personal ornaments and tools they own (Werner 1981). On the other hand, most small-scale societies are now part of a market economy, which enables conspicuous consumption of market goods. Among the Tsimane, men who earn more money from wage labor and sales of horticultural produce devote a greater percentage of their income to the purchase of conspicuous leisure items, such as watches and radios (Godoy et al. 2006). Access to novel material wealth is a source of status in both the Tsimane (von Rueden et al. 2008) and the Ache of Paraguay (Hill and Hurtado 1996). Interaction with outside political bodies has also granted influence to individuals whose linguistic skills enable them to act as culture brokers, as in the Mekranoti (Werner 1981) and Tsimane (von Rueden et al. 2008).

Influential men in small-scale societies tend to have more relational capital in the form of kin ties. Yanomamo men with larger intravillage kinship networks are more likely to gain political influence (Chagnon 1988a), and Efe men from the Congo form affiliative bonds with consanguineal male kin to generate allies in the face of competitive social situations (Bailey and Aunger 1989). Among the Martu of the Western Desert of Australia, men with coresident fathers achieved earlier initiation into manhood (Scelza 2010). Marriage is a common strategy for constructing alliances. Hughes (1988) documents several ethnographic examples, including the Nuer of Sudan and Toba of South India, where high-status men are individuals on whom both affinal and consanguineal relatedness are concentrated. Among the Coast Salish of the Pacific Northwest, a man's social status was associated with his

intervillage alliances, established through marriage (Elmendorf 1971). In Amazonian horticulturalists from Conambo, Ecuador, women occasionally broker factional disputes, and men's social support benefit from their wives' roles as mediators (Bowser and Patton 2010).

Whether due to kin or non-kin, men's social support is paramount to status acquisition. The contributions of embodied and material capital to status acquisition are largely due to their effects on relational capital. People seek social proximity to the strong, skilled, generous, and wealthy because of the knowledge and material goods they might acquire (Henrich and Gil-White 2001) and because of the indirect social value of association with powerful individuals. One of the first quantitative tests of the relative contributions to status of embodied, material, and relational capital is from the Tsimane. Status among the Tsimane was evaluated in different contexts, including dyadic fight outcomes, getting one's way in small groups, and influence over outcomes of community-wide meetings (von Rueden et al. 2008). Tsimane men who are larger and stronger are most likely to win dyadic fights, but influence within small groups and at the level of the community is principally due to social support from both kin and non-kin. Furthermore, social support mediates the positive effects of physical size, generosity, education, and income on influence. In other words, men who are strong, generous, skilled, or materially wealthy accrue more political influence in large part because these attributes attract allies and supporters. Longitudinal data confirms the cross-sectional result: larger and more skilled Tsimane men gained more social support over a 4-year period, and increase in social support (but not increase in size or skill per se) associated with increased political influence over that same period (von Rueden 2011). The prominence of social support to status acquisition among the Tsimane accords with other ethnographic reports. For example, Maybury-Lewis (1974) observes that Xavante men achieve higher status due to the in-group social support engendered by their athleticism, oratory skill, hunting ability, sense of humor, and other attributes. According to Barth (1959), "political action…is the art of manipulating…various dyadic relations so as to create effective and viable bodies of supporters, in other words, so as to create corporate political followings."

In most small-scale societies, older men (but not necessarily the oldest men) receive the most deference (Silverman and Maxwell 1978; Simmons 1945). Strength in male foragers peaks in the 20s (Walker et al. 2002), but older individuals retain prestige because they are more likely to be sought after for advice and they have more relational capital in the form of direct descendants. On the other hand, older males lose prestige as their production skill wanes. Hunting returns peak in the late 30s to early 40s (Walker et al. 2002; Gurven et al. 2006). In many modernizing small-scale societies like the Tsimane, older individuals have had limited access to market-related skills, which are an increasingly important predictor of prestige. Maxwell and Silverman (1970) conjecture that rapid institutional change, leading to information obsolescence, translates into reduced prestige for the elderly. Among the Tsimane, community-wide influence peaks in the late 40s in more remote communities but in the late 30s in communities closer to the market town of San Borja (von Rueden 2011).

The Fitness Payoffs to Social Status in Small-Scale Societies

The patterning of individuals' investments in embodied, material, and relational capital over their lives is the result, in part, of naturally selected physiological and behavioral strategies for status acquisition. Comparison of social status and fertility in small-scale societies can provide insight into how natural selection may have acted on status acquisition strategies in ancestral human environments. Modern small-scale societies are instrumental in understanding human evolution not because they are analogues of any original human society but because they reveal how human adaptations operate in the absence of modern healthcare and contraception, significant material wealth, and large, dense populations comprised principally of non-kin.

The reproductive gains to social status may have reached their height in premodern empires, kingdoms, and sultanates, where high social status included sexual access to a large number of women (Betzig 1986). Approximately 8 % of Asian men living between the Pacific Ocean and the Caspian Sea can trace their Y chromosome to Genghis Khan and his relatives (Zerjal et al. 2003). In small-scale societies, social status is not as clearly associated with reproductive advantages and can appear more costly than rewarding. Acquiring and maintaining status is demanding of time and resources, and not just due to generous food-sharing. For example, Yanomamo headmen are constantly involved in dispute resolution, which has the potential to drag them into others' conflicts. They also take responsibility for patrolling the village perimeter for raiders, putting themselves in frequent danger (Chagnon 1983).

Nevertheless, the relationship between status and reproductive success in small-scale societies is often positive. One of the first quantitative investigations of the status-fertility relationship in a small-scale society, among the pastoralist Yomut Turkmen of Iran, revealed that materially wealthy men have more offspring for their age (Irons 1979). Subsequent studies in other small-scale societies found similar evidence of fertility gains to status-determining traits, including hunting skill among the Ache (Kaplan and Hill 1985a) and warriorship among the Yanomamo (Chagnon 1988a).

To the best of my knowledge, Table 9.1 lists all published studies from small-scale foragers and horticulturalists that have quantitatively investigated the relationship between a measure associated with male social status (hunting ability, physical formidability, or political influence) and lifetime fitness (fertility, offspring mortality, or surviving offspring). The studies control for men's age or report completed reproductive histories. Across the societies represented, traits associated with male status correlate positively with higher lifetime fertility fourteen times out of eighteen (78 %). Of the other four relationships, three produce a near significant positive relationship and one, warriorship among the Waroani (Beckerman et al. 2009), produces a significant negative relationship. In only four populations is offspring mortality evaluated as an independent contributor to total surviving offspring. Ache men who are better hunters, taller and heavier !Kung men, and Tsimane men with more influence (but not more dominant Tsimane men) produce offspring who are

Table 9.1 Male status and lifetime fitness across foragers and horticulturalists

	Population	Fitness measures[a]			References
		More surviving offspring	Higher fertility	Lower offspring mortality	
Hunting skill	Ache (forest)		Yes	Yes[d]	Hill and Hurtado (1996); Kaplan and Hill (1985b)
	Ache (reservation)	No[c]	No[c]	Yes	Kaplan and Hill (1985a); Hill and Kaplan (1988)
	Achuar		Yes		Patton (2005)
	Hadza	Yes	Yes	May be[e]	Marlowe (1999, 2000); Hawkes et al. (2001b)
	Kubo	No			Dwyer and Minnegal (1993)
	!Kung	Yes	Yes		Wiessner (2002)
	Lamalera[b]	Yes	Yes	May be[f]	Alvard and Gillespie (2004)
	Meriam	Yes	Yes		Smith et al. (2003)
	Piro	Yes	Yes		Anderson and Kaplan (2002)
	Tsimane	Yes	Yes		Gurven and von Rueden (2006)
Physical formidability	!Kung	Yes	No[c]	Yes	Kirchengast (2000)
	Tsimane	Yes	Yes	No[c]	von Rueden et al. (2011)
	Waorani	Neg	Neg	Neg	Beckerman et al. (2009)
	Yanomamo		Yes		Chagnon (1988a)
Political influence	Achuar		Yes		Patton (2005)
	Aka		No[c]		Hewlett (1988)
	Ifalukese		Yes		Turke and Betzig (1985); Betzig and Turke (1992)
	Mekranoti	Yes			Werner (1981)
	Meriam	No			Smith et al. (2003)
	Tsimane	Yes	Yes	Yes	von Rueden et al. (2011)
	Yanomamo		Yes		Chagnon (1979); Chagnon et al. (1979)
% Studies showing higher fitness:		71 *(10/14)*	78 *(14/18)*	67 *(4/6)*	

[a] Status–fitness relationship is positive if "yes," null if "no," negative if "neg," or suggestive of positive relationship if "maybe"

[b] Harpooners only

[c] But in predicted direction

[d] Ages 5–9 only

[e] Offspring show greater seasonal weight increase

[f] Offspring have higher body mass indices

less likely to die as children. There is suggestive evidence that the children of better Hadza hunters and Lamelera whale harpooners are also less likely to die, based on their growth rates and body mass indices, respectively. In contrast, children of acclaimed Waorani warriors experience higher mortality. For ten results out of fourteen (71 %), traits associated with status correlate with more surviving offspring, whether the result of higher fertility, lower offspring mortality, or both. Again, the Waorani data alone indicates an opposite effect. Beckerman et al. (2009) suggest that, unlike the Yanomamo, the Waorani have no cultural restriction on the timing of raids as revenge for previous homicides. A lack of downtime between raids, they argue, precludes successful warriors from translating their status into reproductive gains. In addition, women were more likely to be killed during raids than abducted, relative to the Yanomamo.

While cross-cultural evidence from small-scale societies suggests that traits conducive to male status acquisition often experienced positive selection throughout human history, the means by which high-status men achieve higher fitness remains under-investigated. Most of the studies listed in Table 9.1 are selective in their analysis of the factors responsible for increases in fertility or offspring survivorship among high-status men. For example, few studies report extramarital affairs. Whether the fitness gains to status are concentrated within the nuclear family or within the context of extramarital affairs is important to debates about the evolution of human pair-bonding and male parental investment (Gurven and Hill 2009; Hawkes et al. 2010). Identifying the proximate pathways by which status generates current fitness sheds light on the kinds of social relationships evolution has motivated men to maintain.

Figure 9.2 illustrates the potential pathways by which status is translated into fitness gains. These pathways include: (1) the length of a man's reproductive career and his number of mates, (2) the age, fecundity, health, and productivity of his mates, (3) alliances and exchange partnerships, and (4) resources gained as a result of others' deference or acquiescence. These pathways may interact in more complex ways than depicted. For example, the quality of a wife with respect to offspring survival may depend on the allies (including affinal kin) a man expects to gain through the marriage. Alliances also facilitate mate acquisition. Humans use kin and allies to create, manipulate, or circumvent marriage rules (Chagnon 1988b), to coercively acquire women from neighboring groups (Chagnon 1983), and to acquire women via trade or tribute (Betzig 1986).

Pathways (5) and (6) in Fig. 9.2 represent alternative explanations for the status-fitness relationship. Social status may play a minimal role in a man's number of surviving offspring if they result more from his individual productivity and inherited kinship network than from his ability to procure quality mates, engender others' deference, or recruit cooperative partners. Furthermore, status may result from having more offspring, rather than the reverse, due to incentives to increase one's productivity and social support with increasing child dependency.

Pathway 1 High-status men typically have greater mating opportunity, but they accomplish this differently across small-scale societies. While polygyny is observed at low frequencies in most of the societies in Table 9.1, only four studies explicitly
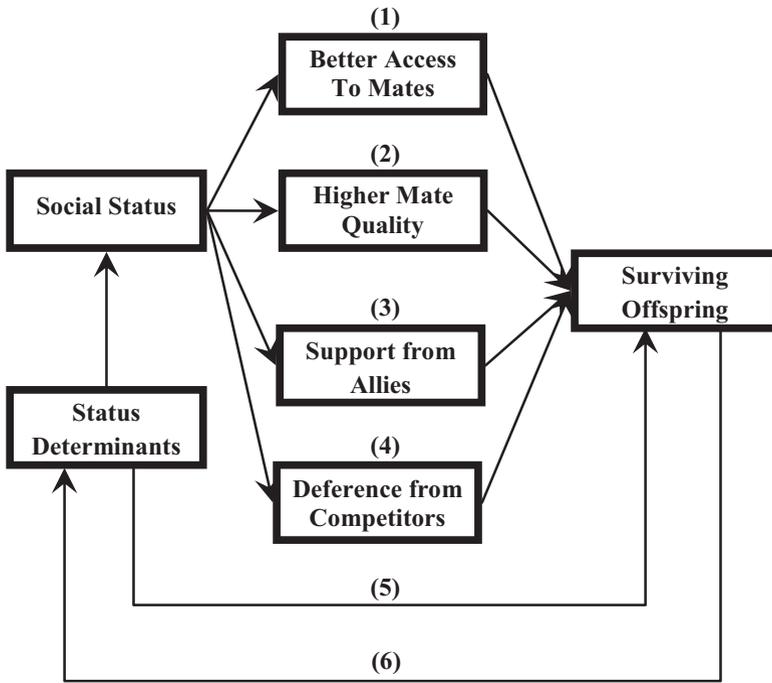
Fig. 9.2 The pathways from social status to lifetime fitness. (From von Rueden et al. 2011)

linked polygny to status. Influential Aka and Yanomamo men are more likely to be polygynous while Waorani warriors and influential Mekranoti men are not. Acclaimed Meriam hunters have more serial wives but not so for the best hunters among the Hadza or the !Kung. Age at first reproduction (AFR) is more commonly associated with status. In four of six societies, high-status men marry wives with an earlier AFR, and in the two societies where they do not, the men themselves have an earlier AFR. Among the Tsimane, a wife's first pregnancy usually follows a year or two after marriage, so a later AFR by low-status men and their wives is due more to late marriages than longer waiting time to first birth.

Men are motivated to pursue status because of fitness gains both within and outside of marital unions. Extramarital affairs are reported for three societies: the reservation Ache, Mekranoti, and Tsimane. Better Ache hunters, more influential Mekranoti men, more physically formidable Tsimane, and more influential Tsimane have higher intramarital offspring survivorship *and* more extramarital affairs. The reproductive measures reported for the other societies in Table 9.1 are not explicitly tied to within-marriage reproduction, but the fertility they report is not likely to be concentrated within extramarital liaisons. While women should prefer husbands who exhibit resource accruing power and commitment, they may place more weight on indicators of 'good genes' when considering extramarital affairs. Masculinized traits such as muscle mass may be costly signals of genetic quality in the face of

testosterone-linked immune-suppression (Folstad and Karter 1992) and other trad-eoffs due to increased mating effort (Gangestad and Simpson 2000). Women may prefer dominant, physically robust men as short-term mates due to the developmen-tal stability and 'good genes' these traits signal. Women may not prefer dominant men as marital partners if dominant men are more likely to commit partner-directed aggression or provide unreliable paternal investment. A study of US undergradu-ate women found they preferred prestigious men over dominant men as romantic partners, particularly in the context of long-term relationships (Snyder et al. 2008).

Pathway 2 High-status men do not always marry higher quality wives, whether in terms of their fecundity (as proxied by interbirth interval) or productivity. The wives of high-status Tsimane and Lamelera men do not have lower interbirth inter-vals while the wives of influential Ifalukese men do. Controlling for the numbers of consumers and producers within families, wives of dominant or influential Tsi-mane men neither spend more time in food production nor produce more calo-ries per day than other men's wives. These results contrast with data from the Hadza (Hawkes et al. 2001b), where the effects of male productivity and status on intramarital reproduction were mediated by wife's productivity. The wives of high-status men may not have to increase their productivity to improve offspring survivorship when their husbands are better providers and receive more social sup-port from allies, both kin and non-kin. Wives might have better support networks themselves.

Pathway 3 Greater social support in the form of trading partners and allies is a ubiquitous covariate with measures of social status. In Table 9.1, six of six soci-eties demonstrate this relationship. However, investment in social support is not always beneficial for men's families, at least in the short term. Sharing decisions which optimize food consumption via reciprocal altruism may trade off with shar-ing decisions which optimize alliance formation or mating display. Influential Tsi-mane men have reputations for sharing meat more widely but they do not have more food-sharing partners nor do their families receive more calories per day from other households (von Rueden et al. 2011). Likewise among the Achuar (Patton 2005), Ache (Kaplan and Hill 1985b), Meriam (Smith et al. 2003), Martu (Bird and Bird 2010), and Lamelera (Alvard and Gillespie 2004), generous food sharing or greater contribution to collective food production is not often reciprocated in kind. In only two of ten cases (from Table 9.1) are high-status men better direct providers for their families. Investments in social support via generosity may only pay off to men and their families over the long term, as a form of insurance. Generous Ache hunters are more likely to be provisioned when sick (Gurven et al. 2000), and better !Kung hunters have more *hxaro* exchange partners (Wiessner 2002), who are long-term sources of not only food but also mates and political support. The magnanimity of the best Martu hunters of western Australia gives them access to ritual power as older adults (Bird and Bird 2010). Men in one Tsimane village were interviewed concerning the help they received after occasional crop loss. Only five men, all in the top 25 % of political influence within the community, reported aid to their fami-lies from non-kin (von Rueden 2011).

Pathway 4 Exchange between higher- and lower-status men does not always involve a bidirectional flow of benefits. During disputes, physically formidable or politically influential Tsimane men receive more deference from their peers (von Rueden et al. 2011), who may be ceding resources simply to avoid the costs of contest competition.

Pathways 5 and 6 Most studies of status and reproductive success do not test for confounding variables. Influential Tsimane men tend to be more productive and draw on a larger intravillage consanguineal kin network (pathway 5), but these variables alone do not account for their fitness gains. Better hunting ability and more numerous consanguineal kin increase Tsimane men's total surviving offspring in part because of their effects on political influence. Evidence from the Tsimane also discredits current offspring dependency as a principal motivator of status acquisition (pathway 6). The ratio of consumers to producers within men's households in 2005 is not associated with change in men's influence over the subsequent 4 years (von Rueden 2011), suggesting that status begets more surviving offspring rather than the reverse.

The Tsimane study (von Rueden et al. 2011) is the first to directly compare all the pathways from Fig. 9.2 to unravel the status-fitness relationship. Physically dominant Tsimane men produce more surviving offspring in large part because dominant men are also more likely to be influential. Political influence results in more surviving offspring because it begets social support and marriage to a younger wife. The latter result begs the question of how women or their kin discriminate among men as prospective husbands. Tsimane men's influence does not peak until two decades after marriage age. It may be that young men's future gains in community-wide influence are highly predictable based on their embodied, material, and relational capital as adolescents. In small-scale societies, adolescence is likely a critical window for acquiring status, akin to the critical period for language acquisition in early childhood. Among the Aka, the cooperative partnerships forged in adolescence are maintained into adulthood (Hewlett and Hewlett 2013). Teenage angst in industrialized, large-scale societies may be the product of a psychology, shaped in small-scale societies, that believes the social status of our middle school years determines our status as adults. Testing this hypothesis requires more study of adolescence in small-scale societies, particularly as part of longitudinal studies that assess changes in status and fitness across the lifespan.

The Origins of Stratification

A minority of hunter-gatherers from the ethnographic record are stratified by social class. Most famous are foragers from the Pacific Northwest, whose economies were based on highly productive salmon runs, whose leaders inherited their political titles, and who practiced warfare and slavery (Ames 2003). A number of ecological factors have been linked to stratification in hunter-gatherers, including

resource abundance (Gould 1982), seasonal food storage (Testart 1982), seden-tism (Kelly 1995), and population density (Johnson and Earle 1987; Keeley 1988; Testart 1982). With more abundant and predictable resources, households are less dependent on sharing to buffer risk in food production. For example, Ache living on reservations have access to horticultural and store-bought goods, and they share food less widely compared to Ache on forest treks (Gurven et al. 2002). Less inter-dependence across families de-emphasizes status-leveling norms. In the Kalahari, access to water-storing melons and domestic animals led to wealth inequality and increased polygyny among the //Gana !Kung (Cashdan 1980). The //Gana not only tolerated resource accumulation but offered respect to the wealthy rather than ridi-cule. In contrast, the Dobe !Kung experienced much greater variation in their food supply and were much more egalitarian (Cashdan 1980). Egalitarianism is not to be viewed as a natural state, a baseline upon which layers of stratification are added as progressive evolutionary stages. Rather, egalitarianism is a social contract main-tained by norms and sanctions and an ecology in which food production is risky and sharing necessary, even for the best hunters.

The distribution of resources across the landscape, in addition to their abundance and predictability, is integral to the emergence of stratification. Where resources are heterogeneously distributed, profitable resource patches can be defended by advan-taged individuals or kin groups (Dyson-Hudson and Smith 1978). This privatization of resource patches potentiates patron-client systems (Boone 1992; Smith and Choi 2007). Clients accept their subordinate economic position due to disincentives to dispersal, including lower concentration of productive habitat elsewhere and so-cial (e.g., unfriendly neighboring groups) or environmental (e.g., mountains, ocean, desert) circumscription (Carneiro 1970; Kennett et al. 2009). With the intergenera-tional transmission of property, inequality ratchets up with each generation (Bowles 2005; Borgerhoff Mulder et al. 2009).

In the Pacific Northwest, chiefs and subchiefs inherited their titles and the rights to salmon runs via primogeniture, and they determined when and how commoners conducted salmon harvests. Chiefs were also entitled to a share of their followers' harvest (Boas 1921). Control of surplus food is the lifeblood of chiefly power, en-abling them to subsidize warfare and infrastructure and to build political support via generosity (Clark and Blake 1994; Hayden 1995). The potlatches of the Pacific Northwest were grandiose, ceremonial displays of chiefs' embodied, material, and relational capital, meant to shore up political support at home and endebt the neigh-boring chiefs who were in attendance. At the potlatch, the seating arrangement, order of distribution of food and property, and the size or worth of gifts all reflected relative positions of the assembled guests (Drucker and Heizer 1967). Among the Gitkasan, individuals would move to new settlements after potlatches where they felt their leader was not as generous, hence powerful, as others (Adams 1973).

Growing populations add fuel to stratification. Productive resource patches sup-port large, dense populations, which foster technological innovation and occupa-tional specialization (Henrich and Boyd 2008). Elites can underwrite and exploit new technology to expand their power. Among the Chumash of the central Cali-fornia coast, hereditary chiefs financed the construction of seagoing *tomal* canoes,

which they used to expand trade up and down the California coast. Chumash groups who lacked *tomals* also lacked hereditary chiefs (Arnold 2010).

Large, dense populations also increase intragroup conflict and the difficulty of collective action. Group members may prefer stratification when more formal leadership helps solve the problems of life in large groups and facilitates collective action in production, trade, defense, or aggression (Steward 1955; Service 1962; Hooper et al. 2010). The Paiute occupying the rich habitat of Owens Valley were more stratified than their neighbors, partly because their irrigation systems benefited from central management (Steward 1933). To coordinate production and maintain social order, Plains Indian bands elected a chief and a constable when they coalesced for the annual buffalo hunt (Lowie 1948). Among prestate indigenous North Americans in general, the number of bureaucratic tiers of decision-making and the number of leadership functions (e.g. military, religious, judicial, productive) increase with a society's maximal community size (Feinman and Neitzel 1984). A nested hierarchy of offices facilitates communication and coordination in large groups (Johnson 1982) while reducing political dissatisfaction by maintaining the face-to-face leadership of more egalitarian societies (Richerson et al. 2003).

Unsurprisingly, high status carries greater reproductive rewards in stratified foragers. Throughout western North America, the privatization of resource patches was associated with increased levels of polygyny (Sellen and Hruschka 2004). Among the Chumash, polygyny was largely restricted to chiefs (Priestley 1937). Chiefs from the Pacific Northwest were also more likely to be polygynous due to bridewealth expenses, and they obtained female slaves through trade or the spoils of war (Barnett 1938). Australian aborigines are an exception to this pattern, with gerontocracies and high levels of polygyny despite egalitarianism in access to food resources and low population density (Hiatt 1996). More than 50 % of all marriages among the Tiwi were older, polygynous men marrying younger women (Hart and Pilling 1960). Hawkes (2000) has suggested that this "Australian paradox" can be tied to the extinction of megafauna in Australia with the arrival of modern humans, limiting the prestige young men can acquire as hunters. On the other hand, generous sharing of kangaroo or monitor lizard meat is key to acquiring ritual power among aborigines, such as the Martu of the Western Desert (Bird and Bird 2010).

Like foragers, horticultural societies vary tremendously in political organization. At one end of the spectrum is the relative egalitarianism of Amazonian horticulturalists like the Tsimane and at the other is the ranked lineage system of hereditary political offices found among Polynesian chiefdoms (Kirch 1984). Land is more of a limiting factor in food production in Polynesia and in other Oceanic societies, promoting property rights, greater wealth disparity, and conflict (Kaplan et al. 2009). In highland New Guinea, Big Men performed military and diplomatic leadership in the face of intra- and intergroup conflict (Meggitt 1977). Big Men of the Mt. Hagen area engaged in competitive exchanges of pigs that served a function similar to the potlatch of the Pacific Northwest (Strathern 1971). Even though Big Men did not formally inherit their positions, their offspring were more likely to become leaders themselves due to inheritance of their fathers' material capital, skill, and social contacts (Wiessner 2010). Where leadership was formally inherited, as in the Trobriand

Islands, chiefs enjoyed rights denied to other men, including the right to multiple wives (Weiner 1988).

In pastoral small-scale societies, polygyny is common and variance in male status and reproductive success is increased relative to most foragers and horticulturalists (Betzig 2012). Men's status depends primarily on their material capital, specifically the number of cattle they own. Among the Kipsigis (Borgerhoff Mulder 1987), Mukogodo (Cronk 1991), and Gabbra (Mace 1996) of East Africa, cattle wealth is the biggest determinant of men's number of wives and lifetime reproductive success. Across human societies in general, the more that defensible material capital determines men's production, the greater the status and reproductive disparities (Kaplan et al. 2009).

Conclusion

Social status is a ubiquitous motivator of human behavior. From the most egalitarian to the most hierarchical human society, individuals who acquire more dominance or prestige receive privileged access to contested resources, including greater political influence and mating opportunity. In small-scale societies, status-leveling coalitions and household mobility restrict the opportunity for physically dominant individuals to coerce their way to power. Nevertheless, greater height or weight is sometimes a characteristic of leaders in these societies, which may be due to the greater efficacy with which large leaders can arbitrate disputes, coordinate collective action, or represent their peers' interests when negotiating with outside groups. Probably for similar reasons, individuals in industrialized states prefer leaders who are taller (Ellis 1994; Murray and Schmitz 2011).

Production skill and generosity are important determinants of status across small-scale societies because they attract political allies, trading partners, and mates. Attractiveness as a husband and extramarital sex partner enable high status men in small-scale societies to produce a greater number of offspring. However, men do not pursue status simply to increase their number of mates. Support from allies, particularly during times of conflict or sickness, can be instrumental to the health of men and their families (von Rueden 2011; Gurven et al. 2012).

The frequency with which high-status men in small-scale societies achieve higher lifetime fitness suggests status conferred similar reproductive advantages in ancestral human societies. Why then is variance maintained in traits conducive to status acquisition, such as physical size or prosociality, if these traits have been subject to such long-term selection pressure? One possibility is that the genotypes of high-status individuals represent a fitness peak which mutation and sexual recombination break down in successive generations. Among Indonesian foragers, horticulturalists, and agriculturalists, high fertility along patrilines rarely persists for more than a few generations (Lansing et al. 2008). While most heritable genetic variation particular to status achievement will be associated with autosomal genes and not the few nonrecombining genes on the Y chromosome, the more polygenic

the status-conferring trait the more likely mutation will check the effects of selection and maintain genetic variation. A related possibility is that status achievement results from conditional behavioral responses to uncorrelated genetic variation (Smith 2011), such as ontogenetic calibration of one's level of extraversion in response to anticipated adult height and muscle mass (Lukaszewski and Roney 2011). Balancing selection may also operate if the fitness advantage to status-conferring traits differs by sex or depends on their frequency in the population. Future studies in small-scale societies will be instrumental in testing these theoretical possibilities.

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Chapter 10
The Emotional Underpinnings of Social Status

Conor M. Steckler and Jessica L. Tracy

Emotions are critically important for navigating the social hierarchy. Emotions motivate people to seek and retain high status, and the nonverbal expressions that are typically displayed as part of an emotional experience communicate important status-related information to others. In this chapter, we examine the ways in which a number of distinct emotions influence status-related behaviors and outcomes.

Throughout this chapter, we use the terms *status* and *rank* interchangeably, to describe one's relative position on the social ladder (i.e., the social hierarchy), regardless of how he or she got there. In all human societies examined thus far, there are individual differences in social rank, such that some individuals have greater opportunities for resource and mate acquisition than others, or receive greater deference than others (Brown 1991; c.f. Ellis 1995). This hierarchical social structure results in clear benefits for those at the top of the hierarchy, but those at the bottom also benefit from the hierarchical system, more so than they would from abandoning social living all together (see Alexander 1974; Williams 1966). As a result, differences in social rank are a reliably occurring part of human social life.

Three Ways in Which Emotions Influence Social Status

Emotions facilitate individuals' navigation of the social hierarchy in three distinct yet interrelated ways. First, the *experience* of a given emotion (i.e., how the emotion feels subjectively, and its associated cognitive and motivational impact) promotes behaviors oriented toward navigating the hierarchy. Emotions influence status-related behaviors through both informational (i.e., affect-as-information; Schwarz and Clore 1983, 1988) and motivational means. According to the "affect as information" hypothesis, emotional feelings function, in part, to inform individuals of changes in their environment, and thereby allow them to respond knowingly and

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flexibly to significant events. At its most fundamental core, affect-as-information suggests that people use their perceptions of internal states (i.e., their feelings) to figure out what they think about the world around them. In contrast, motivational views suggest that emotions have direct motivational force, urging people to behave in certain ways regardless of what knowledge is gleaned by their feelings. Emotion experiences can affect status-related behaviors both by providing individuals affective information about their relative social worth, and by directly motivating them to behave in ways that improve their rank. For example, feeling positive emotion about the self (i.e., pride) can inform an individual that he or she has high social value, and also directly motivate him or her to behave in ways that promote the maintenance of this high rank (e.g., by persevering at a challenging, status-relevant task; Weidman et al. 2014; Williams and DeSteno 2008).

Second, *nonverbal displays* of emotion influence social status by communicating status-relevant information, such as one's current rank or a shift in rank, to others. This can occur both through status *signals*, which evolved specifically for the purpose of status communication, and through *cues*, which yield status information but evolved to serve some other function. In other words, what sets signals and cues apart is whether they were designed by natural selection to communicate some information (in the case of a signal), or were designed to serve some other function but information is incidentally communicated as a byproduct of that other function (in the case of a cue). As an example, chewing food is a reliable cue that one is eating, but chewing did not evolve to communicate this information, in the way that an infant's distress cry evolved as a signal to communicate the child's needs (see Smith and Harper 2003). For human emotion expressions, in most cases the extant empirical evidence does not warrant drawing firm conclusions regarding whether a particular expression that communicates status is a signal or cue, so we largely avoid making this distinction when discussing the relevant findings, but this is an important area for future research (Shariff and Tracy 2011). In general, by communicating status information emotion expressions may help individuals avoid costly disputes that can arise when rank levels of the various parties are unknown. Given that those who know they are lower status tend to defer to higher status others, signaling one's knowledge of his or her relative status may allow both parties to quickly know how the social interaction should proceed. Thus, nonverbal displays of status likely allow for less tumultuous social interactions, compared to disagreements that must be settled through aggression or other costlier means.

Third, emotions influence hierarchical relationships when they are *perceived* in others who show status-related emotional displays. By recognizing distinct emotion expressions in others, and automatically interpreting the meaning conveyed by those expressions, perceivers can adjust their behavior in an adaptive manner, by, for example, deferring to a high-status individual (e.g., Tiedens and Fragale 2003). The processes of displaying and perceiving emotion expressions are closely connected, but we discuss them here as distinct (for the most part), to emphasize the separate benefits accrued to displayers and observers.

Which Emotions Influence Status Attainment and Hierarchy Negotiation?

In this section, we discuss empirical findings on each distinct emotion that is particularly relevant to status, and, for each, examine how that emotion influences status-relevant behaviors and outcomes via its experience, nonverbal display, and perception in others, to the extent that each of these pathways is relevant for the given emotion. We focus on distinct emotions, typically defined as momentary processes that often—though not always—include subjective feelings, physiological changes, cognitive appraisals, and motivated action tendencies or behaviors (see Roseman 2011; Tracy and Randles 2011). Many of the emotions discussed here are particularly relevant to the social domain, given that the most social emotions (i.e., emotions critically involved in the regulation of social behavior) tend to be particularly relevant to navigating social relationships, in general, and status-based relationships, in particular. These socially complex emotions include *pride, shame, envy, contempt,* and *admiration*. However, we also examine several other emotions that are linked to status in important ways, but are typically considered to be more "basic," in that they are shared with nonhuman animals and emerge early, both ontogenetically and phylogenetically (see Panksepp 1992). These status-relevant basic emotions are: *happiness, sadness, anger, disgust*, and *fear*.

Socially Complex Emotions

Pride

Using Experienced Pride to Navigate the Social Hierarchy Pride is experienced in response to socially valued successes caused by the self (Tracy and Robins 2004), and it is the emotion that, more than any other, likely evolved largely for the purpose of enhancing and maintaining social status. There is evidence linking pride to the attainment of high status through all three pathways: experience, display, and perception (see Tracy et al. 2010, for a review).

First, the pride subjective experience motivates individuals to strive for achievements in socially valued domains. Pride feelings are pleasurable and thus reinforcing; there is no other emotion that not only makes individuals feel good, but good about *themselves*. Through socialization, children come to experience pride in response to praise for socially valued achievements, and, eventually, individuals experience pride in response to these accomplishments without needing others' evaluations. The reinforcing properties of pride motivate them to seek future achievements; so, without any need for external evaluations, people strive to develop an identity that coheres with social norms. Individuals who are successful in this pursuit are, in turn, rewarded with social approval, acceptance, and increased status. Supporting this account, studies have shown that that salespeople who respond to work success

with pride tend to work harder and perform better at their jobs (Verbeke et al. 2004), and that feelings of pride directly promote increased persistence, effort, and task performance (Williams and DeSteno 2008; Herrald and Tomaka 2002; Pekrun et al. 2009). These outcomes likely have downstream consequences for rank attainment, but pride has also been shown to directly influence status-related outcomes; individuals experimentally induced to feel pride behave in a more dominant manner in social situations (Williams and DeSteno 2009).

However, the link between pride and status is complicated by the fact that pride is not simply one phenomenon. Individuals reliably distinguish between the pride that promotes hard work and achievement motivation and is based on accomplishments and confidence, and a pride that is based on arrogance and egotism, associated with self-aggrandizement and a sense of superiority (Tracy and Robins 2007a, 2014). Given that the former form of pride, which has been labeled "authentic pride" (Tracy and Robins 2007a), is associated with achievement striving, but the latter form—"hubristic pride"—is not, these findings raise the question of whether both pride facets function to promote high status. Indeed, hubristic pride is linked to a range of antisocial behavioral tendencies and psychopathologies, such as aggression, manipulativeness, and anxiety (Tracy et al. 2009). Could this antisocial emotion be functional in social domains?

To address this question, researchers have turned to the theory that humans evolved to seek and attain two distinct forms of high status: *Dominance*, achieved through force, threat, and intimidation (i.e., fear-based status), and *Prestige*, granted on the basis of demonstrated knowledge, skills, and altruism (i.e., respect-based status; Henrich and Gil-White 2001). According to this perspective, these two distinct forms of status are attained through divergent behavioral patterns, and were selected for by distinct evolutionary pressures (Cheng et al. 2013; Henrich and Gil-White 2001; see also Cheng and Tracy, Chap. 1, this volume). Building on this account, we have argued that authentic pride evolved to motivate the attainment of prestige, whereas hubristic pride evolved to motivate the attainment of dominance (Cheng et al. 2010; Tracy et al. 2010).

When individuals experience hubristic pride, they evaluate themselves as better in some way than others, and experience a subjective sense of dominance, superiority, and power. Not surprisingly, hubristic pride is positively associated with narcissism—a personality profile that often characterizes individuals who seek power at the expense of others—and has been hypothesized to be the emotion that most strongly drives this personality process (Tracy et al. 2009). Narcissism and hubristic pride are both characterized by a lack of empathy toward others, including less fortunate others, which can even result in prejudice against those who are different (Ashton-James and Tracy 2012; Watson et al. 1984). This extreme self-focus, arrogance, and willingness to ignore others' needs, associated with hubristic pride, may equip its experiencers with the mental preparedness to aggress against and even hurt others in their quest for power. It may be for this reason that researchers have found positive correlations between dispositional hubristic pride and hostility, aggression, and a tendency toward interpersonal conflict (Tracy et al. 2009). These behaviors, in turn, are precisely what allow dominant individuals to retain their power.

In contrast, in order to retain subordinates' respect, prestigious individuals must avoid succumbing to feelings of power and superiority. Competition for prestige would likely favor individuals who demonstrate knowledge and a willingness to share it but do not arrogate their authority or lash out at subordinates; aggressive interpersonal behaviors would in some sense "raise the price" subordinates must pay to attain the valued knowledge (Cheng et al. 2013). Authentic pride thus may have evolved to facilitate the attainment of prestige by promoting a focus on one's effort and accomplishments (i.e., making internal, unstable, controllable attributions for success; Tracy and Prehn 2012; Tracy and Robins 2007a), fostering a sense of humility (Cheng et al. 2014), and inhibiting aggression and hostility. Studies demonstrating associations between authentic pride and prosocial behavior, empathy, agreeableness, conscientiousness, and moral action (Ashton-James and Tracy 2012; Hart and Matsuba 2007; Tracy et al. 2009; Tracy and Robins 2007a; Verbeke et al. 2004) are consistent with this account. Furthermore, recent findings suggest that authentic pride might promote achievement and consequent status shifts through a more informational means; several samples of participants were found to respond to low feelings of authentic pride, experienced in response to failure, by changing their achievement-oriented behaviors (i.e., working harder), and these behavioral changes had the effect of improving downstream performance outcomes (Weidman et al. 2014).

Other findings provide more direct support for this account of authentic and hubristic pride as having evolved to promote distinct status-attainment strategies. First, individuals high in trait levels of authentic pride tend to describe themselves as prestigious, whereas those high in trait hubristic pride are more likely to describe themselves as dominant. Second, this pattern was replicated in a study examining hierarchical relationships among individuals on varsity-level athletic teams. Individuals who rated themselves as high in trait authentic pride were viewed by their teammates as prestigious but not dominant, whereas those who rated themselves high in trait hubristic pride were viewed as dominant but not prestigious (Cheng et al. 2010). That these findings emerged in peer-ratings from teammates points to their ecological validity; varsity teams are real-world groups where status hierarchies play a major role in shaping intragroup behaviors and emotions.

Displaying Pride as an Indication of Status Pride also enhances status through its cross-culturally recognized nonverbal expression (Tracy and Robins 2008). This expression informs observers—typically other social group members—of the proud individual's achievement, indicating that he or she deserves higher status. Supporting this account, Tiedens et al. (2000) found that individuals who are believed to be experiencing pride are assumed by others to be high status, suggesting an intuitive association between perceptions of pride and status. Furthermore, both children and adults respond to socially valued success—an event that should boost status—by displaying pride, and this behavioral tendency holds across a wide range of cultures and among the congenitally blind, suggesting that displaying pride may be a universal human response to success (Belsky et al. 1997; Lewis et al. 1992; Tracy and Matsumoto 2008).

A series of recent studies provide direct evidence for an association between pride displays and status gains (Shariff and Tracy 2009; Shariff et al. 2012; Tracy et al. 2013). Using several measures of implicit responding, these studies show that the pride expression is rapidly and automatically perceived to communicate high status, and that pride displays are more strongly associated with high status than a range of other positive and negative emotion expressions—including happiness and anger (Shariff and Tracy 2009). Furthermore, the pride expression communicates high status even when the person showing the expression is otherwise *known* to be low in status—such as when displayed by a homeless person (Shariff et al. 2012). In fact, in this research a homeless man displaying pride was automatically perceived to be equally high in status as a business man displaying shame, testifying to the strength of these emotional displays.

In addition, this finding, that pride displays send unavoidable messages of high status, generalizes across cultures. Individuals living in a traditional, small-scale society in Fiji were found to respond to the pride expression with the same high-status inferences, despite the fact that Fijian culture strongly prohibits overt status signaling (Tracy et al. 2013). In other words, pride displays are automatically associated with high status in a cultural context that is entirely separated from Western cultural knowledge, and where it is unlikely that a socially constructed, visually obvious display of high status would spontaneously emerge, if it were not part of human nature.

Perceiving Others' Status Through the Pride Display Perceiving pride in others is also likely to provide status-related benefits to observers, who can more effectively navigate the hierarchy by showing appropriate deference, knowing whom to emulate, forming productive alliances, and facilitating their own status jockeying. For example, pride displayers may be particularly likely to respond aggressively to status challenges. As a result, perceivers may benefit from recognizing and interacting with such individuals cautiously, to avoid agonistic encounters. More broadly, the knowledge that a pride-displaying individual is high status provides a quick and efficient means of identifying individuals who may be worthy of admiration. Indeed, if the pride displayer achieved a high-status feat, perceivers may benefit from closely watching, and perhaps copying his or her actions. Supporting this account, studies have shown that individuals seeking knowledge acquisition tend to copy the judgments and decisions of those who display pride, more so than those who display other emotion expressions (Martens and Tracy 2013).

Shame

Using Experienced Shame to Navigate the Social Hierarchy Shame arises when individuals experience failure in achievement or social contexts, and attribute their failure to something stable about who they are (that is, to dispositional factors; Tangney and Tracy 2012; Tracy and Robins 2004). The experience of shame can lead to feelings of inferiority or a sense of being valued less than others (Tangney

et al. 1996; Fessler 2004; Gilbert 2003; Brown and Weiner 1984; Jagacinski and Nicholls 1984; Dickerson et al. 2004). Shame feelings thus may influence status outcomes by providing affective information to the experiencer that his or her rank has dropped.

Although it may seem potentially maladaptive (i.e., costly) to experience shame—an emotion that lowers self-esteem and can promote anger, resentment, and even addictive behaviors (Randles and Tracy 2013; Tangney et al. 1992)—these costs must be weighed against the alternative: *not* experiencing shame in typical shame-eliciting situations. In other words, what might be the consequences of a deficit in the capacity to experience shame? Like physical pain, which is aversive but highly adaptive by virtue of promoting injury avoidance, shame experiences may be a kind of alarm system. Although chronic dispositional proneness to shame may be maladaptive, in certain situations momentary shame is likely to be functional, by warning individuals that they are about to suffer a drop in status, and thus should change their behavior (or run away; cf. Nesse 1991). Shame experiences may be a large part of what motivates transgressors to behave in accordance with social norms (Fessler 2007). In the same way that pride's pleasurable affective properties reinforce success, a single episode of shame's displeasurable properties may serve to prevent future failure (Barrett 1995; Ferguson and Stegge 1995).

Displaying Shame as an Indication of Status Studies have shown that shame displays are automatically perceived as communicating low status (Shariff et al. 2012; Shariff and Tracy 2009). Although perceptions of low status can reduce the displayer's fitness in a number of ways (e.g., Barkow 1975; Cowlishaw and Dunbar 1991; Leary et al. 1995), nonverbal displays of shame may nonetheless provide certain benefits to displayers, by appeasing onlookers after a social transgression (Keltner and Buswell 1997; cf. Fessler 2004). Appeasement is essential to the long-term survival of interpersonal relationships, and to the maintenance of one's place within a social group (i.e., avoiding social rejection). Keltner et al. (1997) defined appeasement as "the process by which individuals placate or pacify others in situations of potential or actual conflict" (p. 360). Specifically, when individuals violate social norms, they risk unpleasant reactions from others (e.g., anger, retaliation, ostracism), which can be dangerous (Gilbert 2007). By signaling to others their recognition and regret regarding unfavorable actions, transgressors' shame displays can effectively minimize the severity of others' negative responses.

Appeasing others is a cost-efficient way of reducing the potential for such unpleasant reactions; though it may cost a rung or two on the social ladder, appeasement is likely to conserve more resources than leaving the social group altogether, or being forced to leave. In part, this is because the time and energy saved by submitting and appeasing rather than risking conflict or social exclusion can be used for other pursuits that can enhance fitness, such as resource and mate acquisition and retention (Gangestad and Simpson 2000). Furthermore, it is important to keep in mind that the capacity for shame evolved in a time that was considerably more violent than today (Pinker 2011), and where ostracism and conflict likely had serious consequences, so while it is perhaps not as critically important to appease in

many contemporary cultural contexts, in most of human history displaying shame at the right time may have provided a large survival advantage.

A growing body of research is consistent with this account.[1] First, behaviors associated with the human shame expression have been observed in a number of nonhuman species during situations of submissive appeasement, suggesting that shame displays may have originated as submission displays shown by our nonhuman ancestors. Indeed, appeasement displays in nonhuman primates have received a good deal of research attention (e.g., de Waal 1989); these behaviors are thought to prevent or reduce aggression in others and help re-establish social ties. In humans, submissive postures characteristic of shame are displayed spontaneously in response to others' expansive, dominant postures (Tiedens and Fragale 2003). Likewise, shame behaviors such as head tilted downward and slumped posture or narrowed shoulders have been documented in response to failure or loss of a fight in human children as young as 2.5–3-years old (Belsky et al. 1997; Lewis et al. 1992; Stipek et al. 1992), older children aged 3–10 (Ginsburg 1980; Strayer and Strayer 1976), high-school students (Weisfeld and Beresford 1982), and adult Olympic athletes from numerous countries (Tracy and Matsumoto 2008). One interesting finding that emerged from the last study was that although athletes were found to reliably display shame in response to Olympic defeat, this was the case only if they were from countries outside of North America and Western Europe. This cultural difference—the absence of failure-based shame displays by individuals from the most individualistic and self-expression valuing nations—suggests that, just as Fijian cultural norms may discourage the expression of pride, other cultural groups may impose strict "display rules" on the appeasing but status-lowering expression of shame. The finding that congenitally blind athletes across cultures—including several from Western nations—did reliably display shame in response to loss at the Paralympics, in this same research, supports this emotion-regulation interpretation, and suggests that shame displays may be an innate behavioral response to failure or social transgression, situations where an appeasing communicative signal would be adaptive.

In sum, the shame expression may have evolved as a functional social signal, to inform onlookers of: (a) a transgressing individual's awareness that social norms have been violated and (b) his or her respect for those norms. This latter communication likely increases perceptions of trustworthiness; the transgressor is choosing to acknowledge his or her error, rather than hide it, and thus indicating his or her sincere acknowledgment of, and respect for, the transgressed norm. This is an important message to send after a transgression, as those who break a social rule without communicating an admission of norm violation may be perceived as disrespectful of the group's norms, and likely to violate other norms in the future (Gilbert 2007). Individuals who are perceived as trustworthy will, in contrast, be included in social groups, and will benefit from this membership by acquiring access to shared

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[1] Some researchers have posited a similar appeasement function for embarrassment (e.g., Keltner 1995), but due to relatively less research attention and limited space, we do not review that work here.

social and material resources. It may be for this reason that shame displays increase the sexual attractiveness of both the men and women who display them, at least in North American cultural contexts where the low-status message sent by male shame displays is not as problematic for male mate value (Beall and Tracy 2014; Tracy and Beall 2011).

Perceiving Others' Status Through the Shame Display By perceiving shame displays in others, observers learn which group members are relatively lower in status, and can adjust their behavior accordingly, by deferring less to these individuals or being more assertive and demanding of them. Supporting this account, in a recent study we gave participants the opportunity to divide a shared resource with a partner who, unbeknownst to participants, was a confederate displaying a particular emotion expression. We found that participants allocated less of the resource to confederates who displayed shame compared to other expressions, yet judged these decisions to be equally fair (Steckler and Tracy 2014). This finding suggests that perceivers judge shame displayers as less deserving of a shared resource, given their reported sense that the fairest division was one that left them with the greater share than the shamed partner.

More broadly, by communicating a social interactant's willingness to accept less, shame displays may be critical to the formation of adaptive social bonds. The benefits of cooperation are often multiplicative, not merely the sum of the efforts of those involved, making this a highly adaptive social strategy for each separate individual involved, including those who receive a smaller share (Fessler 2007; Boesch 2005). Consequently, there may be numerous survival-related benefits to effectively observing shame in others, using it to infer their level of commitment to the group, and choosing relationship partners on this basis.

Envy

Using Experienced Envy to Navigate the Social Hierarchy When individuals view others as high in competence but low in warmth, they tend to feel envy (Fiske et al. 2002), a negative emotion experienced in response to another's higher status or costly possessions. Given that envy requires a comparison between the self and another individual, it can be quelled by bringing the envier and envied individuals' relative ranks closer (Smith and Kim 2007; Hill and Buss 2008; Parrott and Smith 1993).This can be accomplished in two ways. First, the envier can seek to attain items or skills associated with the envied individual's high status for him or herself, allowing the envier to "keep up with the Joneses" (Crusius and Mussweiler 2012; van de Ven et al. 2011). In this way, envy directly motivates status-seeking behaviors. Second, the envier can seek to reduce the status, resources, or well-being of the envied. This can occur through derogation (Salovey and Rodin 1984), or even behaviors that come at a cost to the envier, such as paying money to ensure that others with more money lose some of theirs, or simply by being uncooperative (Parks et al. 2002; Zizzo and Oswald 2001). These behaviors may partly stem from the

envier's perception that the envied individual's advantages are unfair; Smith et al. (1994) showed that perceived injustice predicts feelings of hostility in response to an experience of envy (Smith et al. 1994). Thus, envy appears to motivate people to change a status quo they do not like or perceive as unjust, either by seeking to increase their own status or reduce the status of another.

To some extent, envy is similar to shame, in that both involve feelings of inferiority. However, while those who feel ashamed tend to accept defeat and engage in behavior withdrawal, those who experience envy are typically unwilling to accept their relatively lower status, and instead seek to improve it. It may be for this reason that people do not like to admit to feeling envy (Smith and Kim 2007); acknowledgement of envy would mean acknowledgement of an unwanted status differential (Hill and Buss 2008). This suggests an important contrast between these two low-status emotions: Envy drives competition and behaviors aimed at altering the existing status order, whereas shame involves the acceptance of one's lower status. As far as we are aware, there is no known nonverbal expression of envy, and so no prior research on the status-related effects of expressing envy or perceiving it in others.

Contempt (i.e., Scorn)

Using Experienced Contempt to Navigate the Social Hierarchy Contempt, also referred to as scorn, is an emotion that occurs in response to another's failure to uphold his or her duties to the group or to properly respect the social order by, for example, demonstrating disloyalty to a superior (Rozin et al. 1999). At a broader level, contempt is experienced when individuals perceive others as low in competence and warmth (classic examples of groups perceived this way are the poor and drug addicts; Fiske et al. 2006), or, at least, lower in competence than oneself (Hutcherson and Gross 2011; Matsumoto and Ekman 2004). Contempt thus may function to provide affective information to the experiencer that the target of his or her contempt deserves lower status. In this way, contempt may serve an informational function opposite to that of shame.

Displaying Contempt as an Indication of Status To our knowledge, prior research has not examined whether nonverbal displays of contempt, known to be cross-culturally recognizable (Ekman and Friesen 1986), influence status judgments or status-related behaviors in either displayers or perceivers. Several researchers have suggested that contempt displays function to signal an intention to acquire higher status (Matsumoto 2008; see also Keltner and Haidt 1999), but the only empirical support for this account comes from a study testing whether head tilt upward influenced perceptions of dominance (Mignault and Chaudhuri 2003). Results demonstrated an effect of this nonverbal behavior on dominance judgments (of the displayer), but this may have been due to the communication of pride, which is more reliably associated with head tilt up than is contempt (Tracy and Robins 2007b). To address this issue, future studies might examine the status implications of displaying a unilateral lip raise—a unique component of contempt (Ekman and Friesen 1986)—without the addition of head tilt.

Admiration

Using Experienced Admiration to Navigate the Social Hierarchy When individuals perceive others as high in competence and high in warmth, they tend to respond with admiration (Cuddy et al. 2008), an emotion that may motivate them to seek out the admired target. By increasing one's proximity to the admired, the admirer increases his or her likelihood of imitating or learning valuable skills from this competent group member, currying his or her favor, and, ultimately, attaining higher status for him or herself (Sweetman et al. 2013; Algoe and Haidt 2009; Henrich and Gil-White 2001). Admiration also motivates people toward self-improvement in domains in which the admired target is successful (Algoe and Haidt 2009), thus serving as a carrot to status attainment.

As far as we are aware, there is no known nonverbal expression of admiration, so no prior research on the status-related effects of expressing admiration or perceiving it in others.

Basic Emotions

Happiness

Using Experienced Happiness to Navigate the Social Hierarchy Several studies have examined the relation between experienced happiness and status, but findings are mixed, perhaps in part because of the different ways in which both dimensions have been conceptualized and assessed. Studies that have used socioeconomic status (SES) as a proxy for status have documented only a weak positive relation between SES and happiness (or, subjective well-being; e.g., Diener et al. 1999; see also Myers and Diener 1995). However, before concluding that the experience of happiness is only slightly relevant to the navigation of status hierarchies, we need to consider three other sources of evidence. First, the desire to attain happiness may motivate status seeking, under the assumption that increased status will lead to increased happiness, even if this is not entirely the case. Indeed, research suggests that individuals adjust to various life circumstances fairly rapidly, such that even very positive experiences produce a happiness that is fairly short lived (Brickman et al. 1978). If this is the case, then studies that measure forecasted happiness, rather than experienced happiness, should find a substantial relation with forecasted rank increases. This view is consistent with evolutionary accounts suggesting that humans evolved not to experience happiness as an end point, but rather as a motivational force; people seek happiness, at an ultimate level, because in doing so they are motivated to do things that facilitate their survival and reproduction, such as seeking out status-attainment opportunities (Nesse 2004; Buss 2000).

Second, the weak relation between SES and happiness is belied by a stronger correlation between local status (i.e., sociometric status) and happiness. Given

that SES captures one's overall status within the broader society, but not one's status within his or her local social group (as people tend to socialize with others who are similar to them in SES), measures of SES may fail to capture the true relation between social rank and subjective well-being. In fact, when status is measured at the level of the local group, happiness is more strongly associated with rank; studies show that respect and admiration within one's local group, but not socioeconomic status, predict subjective well-being, and manipulations of sociometric status lead to greater increases in subjective well-being (Anderson et al. 2012).

Finally, there is evidence for a causal relation in the opposite direction; subjective experiences of happiness can *promote* status increases. According to Fredrickson's (2001), "broaden and build" theory of positive emotions, happiness informs individuals that they do not need to devote resources to problem solving, so can instead seek out opportunities to broaden and build their social worlds, including taking advantage of opportunities for status attainment. Supporting this view, a longitudinal study found that subjective well-being positively predicted occupational attainment years later (Roberts et al. 2003). However, experimental studies addressing this issue have produced more mixed findings. Several studies have found that induced positive affect leads individuals to become less interested in solving conflicts competitively, and more interested in collaborations and concession making (Baron et al. 1992; Baron 1990). This behavioral pattern, while consistent with the broaden-and-build social pattern, does not seem ideal for status attainment, but a focus on collaboration might promote the attainment of prestige (Henrich and Gil-White 2001). In fact, participants in this study who became more likely to concede also set higher performance goals, suggesting a link from happiness to achievement behaviors, which should ultimately promote status.

Displaying and Perceiving Happiness as an Indication of Status Nonverbal displays of happiness can, in certain situations, promote perceptions of high status. Tracy et al. (2013) found that both North American college students and Fijians living in a small-scale traditional society judged individuals who displayed happiness to be high in status, though these judgments were weaker when they were made implicitly, suggesting that the association between status judgments and happy displays is not a strongly automatic one. Other studies using Western student samples have found that happy displays are judged as indicating high dominance (Knutson 1996), and that high-status individuals are expected to display happiness more than those low in status (Conway et al. 1999; Knutson 1996). One explanation for these findings, as well as the general view that happy displays evolved to communicate friendliness, receptivity, and lack of threat (Mehu et al. 2007; Shariff and Tracy 2011), is that happy displays did not evolve to signal status-related information, but rather came to communicate high status through cueing—information implied by the more direct communication of positive mood or willingness to befriend.

Sadness/Melancholia/Depression

Using Experienced Sadness to Navigate the Social Hierarchy The experience of sadness may allow for effective navigation of the social hierarchy in at least two related ways that *de-motivate* the experiencer. First, sadness can serve as an intrapersonal status attainment brake. In this account, sadness and associated fatigue occur in response to unattainable goals, and provide psychological and physiological encouragement to desist goal pursuit. More specifically, individuals may experience a sad or dejected mood when they struggle to achieve a socially valued goal that is beyond their reach. In such cases, sad mood is functional because it dissuades individuals from wasting resources by continuing to pursue the unattainable. In support of this view, Keller and Nesse (2005) found that participants who had experienced sad mood within the past year were more likely to report fatigue—a possibly functional component of sadness, from this perspective—if the sad mood was preceded by goal failure than if it was preceded by other causes, such as loss of a loved one.

Second, sadness may function as an interpersonal yielding strategy. In this account, sadness follows directly from a status loss and works to keep the low-status individual submissive (Price et al. 1994; Price and Sloman 1987). Supporting this view, Fournier (2009) found that adolescents who occupied low ranks in the eyes of their classmates tended to report higher levels of depression. Like the intrapersonal brake account, this view suggests that sadness functions by virtue of being demotivating; correlates such as anhedonia may prevent low-status individuals from seeking out opportunities that would put them within high-status individuals' radars, and also allow for the conservation of energy to best cope with the reduced opportunities imposed by low status. Supporting this account, McGuire and Raleigh (1985) found a positive association between serotonin—a neurotransmitter strongly negatively associated with depression in humans—and social rank in vervet monkeys, suggesting a possible association between sad mood and status in humans. Furthermore, vervet monkeys given selective serotonin reuptake inhibitors (SSRIs), which increase brain levels of serotonin and are used to treat depression in humans, became more dominant in response, suggesting a possible causal relation between the neurochemistry of sad mood and social rank (Raleigh et al. 1991). Likewise, humans taking serotonin agonists (which increase brain levels of serotonin) have repeatedly shown decreases in quarrelsomeness and increases in affiliation, cooperation, and status (Moskowitz et al. 2001; Tse and Bond 2002; Knutson et al. 1998).

Displaying Sadness as an Indication of Status Sadness displays are shown following the potential for loss in status-relevant domains (Tiedens 2001) and domains less closely linked to status, such as the loss of a loved one (Gross et al. 1994). Individuals who display sadness are perceived as low in dominance (Knutson 1996), and individuals known to be low status are expected to display sadness in negative situations (Tiedens et al. 2000). However, it is unclear whether sadness displays are signals of status loss or cue low status for culture-specific reasons, such as gender norms about the appropriateness of certain displays. For example, one study found

that male displays of negative emotions (including sadness) led to reduced status for the displayers; according to the study's authors, this finding was due to the normative belief that men should not display sadness (Anderson et al. 2001). However, others argue that sadness displays in fact signal low threat (see Gilbert 2006, for a review), in which case the low-status judgments of sad men may result from something intrinsic to the expression, relevant to its evolved function. Given that shame displays are more likely to be low-status signals (see above; also see Martens et al. 2012), it seems more probable that any status information communicated by sadness results from other messages more inherent to the emotion.

Perceiving Others' Status Through Their Sadness Displays It is not entirely clear how observers use the status-related information garnered from others' sadness displays, but one possibility is that they acquire the knowledge that these individuals need not be considered serious status competitors, at least while they are displaying (and thus presumably experiencing) sadness. Depending on the observer's relationship with the displayer, the display may also indicate an opportunity to help the individual, and thereby strengthen the interpersonal relationship. This could have downstream status-relevant consequences, such as allowing individuals to forge alliances that benefit future status conquests. Alternatively, the message that the displayer is in a weakened or needy position may allow opportunistic perceivers to aggressively take advantage of the displayer's current low status.

Anger

Using Experienced Anger to Navigate the Social Hierarchy Lazarus (1991) saw "[t]he basic motive to preserve or enhance self-esteem against assault" (p. 222) as a crucial component leading to the experience of anger. Others view anger as a response to a violation of justice or fairness (Rozin et al. 1999). Drawing on both these accounts, anger may function, in part, to inform individuals that their current social ranking is unjust and should be changed or fought (see Tyler 1994).

Unfair treatment—for example, being given a disproportionally small amount of a shared resource—can be a sign that one is being subordinated. By feeling anger in response, individuals become motivated to punish the individual subjecting them to unfairness, or otherwise indicate that they do not accept the suggested status quo. This effect has been observed in experiments using the Ultimatum Game, where a Proposer must divide a shared pool of money with a Responder, but the Responder must accept the offer in order for either participant to acquire any money. Responders who are offered low amounts report feeling anger, and respond by rejecting these unfair offers, even though this means punishing themselves (as well as the Proposer) by forgoing money they would otherwise receive (Sanfey et al. 2003; Pillutla and Murnighan 1996). Although this may seem like a maladaptive response, this tactic can ultimately deter being taken advantage of or subordinated in future exchanges (e.g., Yamagishi et al. 2012; but see Henrich et al. 2001 for cross-cultural variation in Ultimatum Game rejection behavior). This view of anger

and status can be understood from the 'recalibration theory of anger' (Sell 2011). From this perspective, anger functions to resolve conflicts of interest to the benefit of the experiencer by motivating behaviors, such as aggression, that cause others to 'recalibrate' and treat the angry individual better (e.g., giving into the angry individual's demands). Critically, those in a better position to inflict costs or withhold benefits should be more prone to using this strategy for their benefit. Supporting this account, Sell and colleagues found that physically stronger men (who are more capable of inflicting harm when angry) are more likely to experience anger, and report greater success at resolving social conflicts in their favor (Sell et al. 2009).

Displaying and Perceiving Anger as an Indication of Status Nonverbal displays of anger have been found to communicate high status (Tiedens 2001). Specifically, individuals who display anger are perceived as more deserving of status than those who display certain other emotions, such as sadness; however, anger displays are not as strongly associated with high status as are pride displays (Shariff and Tracy 2009). Similarly, verbal displays of anger can be an effective negotiation tactic (Sinaceur and Tiedens 2006). Communicating one's anger to others, verbally or nonverbally, may influence status for several reasons. Tiedens (2001) found that status conferral was mediated by perceptions of competence, suggesting that anger displays influence judgments of status-relevant traits. In addition, Sinaceur and Tiedens (2006) found that, in the context of a negotiation, anger displayers were perceived as tougher and thus less likely to budge. However, there is some evidence that the lowered brow component of the anger expression conveys dominance in Western cultures but not in several non-Western populations (Keating et al. 1977, 1981). If this is the case, anger may be particularly relevant to status perceptions in the Western part of the world, where perceivers judge anger displayers as high in status and competence (Tiedens 2001). These judgments likely benefit both displayers and perceivers, the latter of whom quickly learn which interaction partners are likely to engage in costly conflicts to assert or maintain their status.

Disgust

Using Experienced Disgust to Navigate the Social Hierarchy Disgust likely originated to dissuade individuals from ingesting poisonous or noxious substances, but later became co-opted as an emotional response to social events that are perceived to be metaphorically nauseating (Chapman et al. 2009; Rozin and Fallon 1987). Supporting this account, Chapman et al. (2009) found that facial muscles associated with disgust were activated in response to the taste of bitterness, pictures of feces, and unfair offers in the Ultimatum Game. Disgust thus may function similarly to anger in the domain of status hierarchies, by dissuading individuals from assenting to a suggested status quo or providing information that tracks unfairness.

Disgust is also similar to contempt, in that it is experienced toward individuals who are low in competence and warmth (Fiske et al. 2006), and can motivate avoidance of those individuals, who are typically low on the social ladder (e.g., the

homeless). From a strategic vantage, there is little to gain from interacting with individuals at the very bottom of the hierarchy, so disgust may allow individuals to save social resources needed for more valuable status-relevant interactions.

Displaying and Perceiving Disgust as an Indication of Status Given that disgust is experienced toward those who are perceived to be lower in status, it is not surprising that those who display disgust are perceived as high in status (Knutson 1996). Like anger, though, disgust displays are not as strongly associated with high status as are pride displays (Shariff and Tracy 2009). Like happy displays, any status-relevant communication function of disgust likely occurs as a result of cueing rather than signaling—disgust displays presumably evolved to communicate other pertinent social information (typically about the target of the disgust), and may be perceived to indicate the displayer's relatively higher status as a byproduct of that other information.

Fear and Anxiety

Using Experienced Fear and Anxiety to Navigate the Social Hierarchy Fear and anxiety are considered together here as they likely play similar roles in status navigation, given that fear is typically considered a more intense or shorter-lived version of anxiety (but, see Perkins et al. 2012). The experience of fear or anxiety may promote monitoring of social situations in which the threat of a status loss or social exclusion is possible (Marks and Nesse 1994). In support of this view, lower-rank individuals tend, on average, to be more fearful (Plutchik and Landau 1973). The experience of fear may function to prevent these individuals from transgressing in social situations where mistakes would be costly. Low-status individuals are relatively devalued by other group members, so their social transgressions are likely to be more costly—as they are more likely to result in expulsion. By chronically experiencing fear, or being more prone to experience fear in complicated social situations, individuals low in status may be particularly motivated to behave cautiously in situations that could result in punishment.

Displaying and Perceiving Fear/Anxiety as an Indication of Status Displaying fear as a signal of one's relatively lower status is common among some nonhuman animals (e.g., Bauman et al. 2006). Fear displays may also serve this communicative function in humans, at least in social hierarchies based on dominance, where there is a frequent threat of violence and intimidation by high-status individuals. Indeed, a validated measure of perceived dominance includes items such as, "I'm afraid of him/her" (Cheng et al. 2010). By displaying fear in the presence of dominant group members, individuals may effectively communicate their relatively lower dominance, and willingness to defer (Knutson 1996). As is the case for other nonverbal displays of low status, these cues can spare both parties from potentially costly conflicts.

Limitations of the Reviewed Research and Remaining Questions

Are the Status-Related Functions of Emotions Universal?

Many of the studies reviewed here were based on samples typical of psychological research: undergraduate students from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies (Henrich et al. 2010). As a result, in many cases we cannot know whether the link between these emotions and status generalizes across cultures, as would be expected of an evolved process. Future cross-cultural studies are needed to address this issue, and to provide insights into how cultural and learning processes influence associations between emotions and status.

It is important to note, in this context, that evidence of cross-cultural variation is not necessarily evidence of an absence of universality, though it can be suggestive. Culture builds upon and modifies naturally selected tendencies, and can thus mask an underlying universal behavior or association (see Tooby and Cosmides 1990). For example, Tracy and Matsumoto (2008) found that sighted North Americans tend not to display shame after losing a judo match, yet congenitally blind athletes, who have never seen a shame expression, tend to do so, suggesting that the shame response to failure is unlikely to be learned (at least not through processes of visual modeling). Together, these two findings point to the conclusion that North Americans suppress the display or experience of shame, at least in the highly public situation of loss at the Olympic Games. It would be incorrect to infer from these results that North Americans do not experience shame in response to failure (particularly given evidence that young children in North America do display shame in such situations; Lewis et al. 1992). For this reason, an ideal approach is to combine cross-cultural methods with other approaches, such as studying populations who are unlikely to have learned the association of interest or cultural rules about this relation, such as infants. Studies using this approach have, in fact, demonstrated that very young infants can mentally represent and "understand" social dominance, suggesting early origins of the perception of status-related concepts (Mascaro and Csibra 2013; Thomsen et al. 2011), and opening the door for future research examining the origins of the associations between emotions and status.

Status and Emotion Among Nonstrangers and with Repeated Interactions

Another limitation of much of the research examining the impact of emotion displays on status perceptions is a tendency to rely on unknown emotion displayers (i.e., photos of unfamiliar targets; e.g., Shariff and Tracy 2009). Most real-world status-relevant interactions occur between coworkers, friends, family members, or acquaintances, raising questions about the extent to which the prior findings

generalize to the real world. In real-world relationships, individuals typically have a pre-existing sense of each other's relative rank, independent of the information conveyed by an emotion display. Studies are thus needed to examine the relevance of emotion expressions on hierarchy in more ecologically valid contexts. Studies that examine the emotional underpinnings of real-world hierarchies, such as members of a university athletic team (e.g., Cheng et al. 2010; see also Tiedens 2001) have taken important steps in this direction, but more work is needed, particularly on the impact of emotion expressions within longer-term relationships. Studies are also needed to examine interrelations among the three major ways in which emotion influences status (i.e., experience, display, perception). How, for example, does one person's display influence another's perception and subsequent experience?

Conclusion

A great deal of progress has been made in understanding the nuanced ways in which major facets of emotions—their experience, nonverbal display, and perception in others—are involved in navigating social hierarchies. Together, the reviewed research suggests that a rich layer of emotions underlie an ever-changing social asymmetry. Though these findings provide numerous insights about the importance of emotion for navigating the status hierarchy, much remains to be explored. We hope this review can serve as a foundation for future research examining these issues from functionalist and evolutionary perspectives.

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Part III
Intrapsychic and Interpersonal Consequences of Status

Chapter 11
Decision Making at the Top: Benefits and Barriers

Nathanael J. Fast and Priyanka D. Joshi

Making sound decisions is paramount to effectiveness in nearly any social arena. For this reason, judgment and decision making has become a prominent research topic in a number of disciplines, including psychology, economics, and organizational behavior. Furthermore, the relationship between one's placement in social hierarchies and decision making is particularly important. As individuals move toward the top of a hierarchy, there is increasingly more to gain from wise decisions about how to invest one's time, money, and effort, as well as more to lose from poor choices. Additionally, the decisions made by those at the top tend to affect a wider array of people, which means that their choices carry more weight than those of less prominent members in the group. Consequently, it is important for behavioral researchers to more fully understand and illuminate how one's placement in a social hierarchy shapes judgment and decision making. In this chapter, we aim to further this goal by examining the following question: When and why does having a position of elevated power and status relative to others facilitate versus hinder effective decision making?

Recent findings in the power and status literature provide some insight into the relationship between hierarchical positioning and decision making. Before examining existing findings, however, it is necessary to first acknowledge a key point: although related, power and status are distinct constructs (Blader and Chen 2012; Fast et al. 2012a; Fragale et al. 2011; Magee and Galinsky 2008). Power is typically defined as the possession of disproportionate control over valued resources whereas status refers to the respect and admiration one has in the eyes of others (Magee and Galinksy 2008). Thus, it is important to acknowledge this difference as well as highlight when power and status are likely to produce similar effects and when they are likely to diverge.

Although power and status are distinct, it is also the case that they are often positively correlated and tend to be mutually reinforcing (Magee and Galinsky 2008). Given this, until recently, researchers have not made a distinction between power and status and, in many cases, often lumped the two together in their studies. This

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makes it difficult to identify findings in the literature that are solely about either power or status. Given our interest in the consequences of hierarchy on decision making combined with the current state of the literature, we will review findings that examine the state of possessing high levels of power and/or status and highlight the effects of this state on decision making. We do so based on the assumption that, in many cases, the effects of power and status will be similar. For the sake of simplicity, we have elected to use the term power throughout the chapter to refer to position at the top of the social hierarchy unless the research being described was specifically about status. At the conclusion of the chapter, we explicitly address the distinction between power and status and discuss when a set of findings is likely to emerge only in relation to either one or the other.

Decision Making at the Top

Powerful individuals—those who have access to critical resources, such as national leaders, CEOs, and high-ranking officials in organizations—are often thought to have an ability to make good decisions. However, one can easily think of occasions in which those at the top of social hierarchies made poor decisions. For instance, the financial crisis of 2008 may have been prevented if measures were taken to prevent the excesses on Wall Street. The US financial crisis inquiry commission reported that the crisis could have been avoided if regulators who had power to interfere in the situation had noticed and responded to the "tide of toxic mortgages, breakdowns in corporate governance, and excessive borrowing and risk by households and Wall Street" (Financial Crisis Inquiry Commission 2011). There are many additional instances in which top management and CEOs of organizations have turned a blind eye to changing markets, growing competition, and flaws in their manufacturing processes. For instance, Firestone, the leading tire and rubber manufacturer, underwent huge losses in 1978 after consumers filed lawsuits against the company for selling defective tires resulting in millions of dollars spent by the company in order to compensate victims and recall defective tires. It was later revealed that quality control managers at Firestone had raised issues about the safety of the newly launched tires but their warnings were ignored by top management, resulting in their downfall.

In short, although powerful individuals routinely make good decisions, they are also susceptible to influential psychological processes that can cause them to make bad decisions. In this chapter, we review research on power and decision making and discuss factors that facilitate or hinder decision making among those at the top of social hierarchies. In particular, we will focus on how having or lacking power affects decisions about how to spend one's time, money, and effort by exploring two key mechanisms: (1) subjective sense of control, and (2) prescriptive role expectations that increase the need for competence. We draw on existing findings to emphasize benefits and costs associated with each of these two mechanisms and conclude the chapter with a section on implications and future directions for research, including a discussion of the similarities and differences between power and status.

Power and the Sense of Control

A review of the literature on power makes one thing very clear: Relative placement in the hierarchy has important consequences for cognitive and behavioral tendencies (for reviews see, e.g., Fiske 2010; Keltner et al. 2003; Magee and Galinsky 2008). Among other things, power—typically defined as the ability of an individual to control outcomes in an interdependent relationship (Keltner et al. 2003)—is associated with greater perceived control over one's environment and future outcomes (Fast et al. 2009). For instance, participants who were primed with power by being randomly assigned to a manager role perceived heightened levels of perceived control, an effect that mediated optimism about future outcomes in an unrelated task (Fast et al. 2009; experiment 2). Furthermore, participants who were primed with power via a recall task, experienced an exaggerated sense of control which, in turn, mediated higher scores on a self esteem measure and enhanced action orientation (Fast et al. 2009; experiment 3). These findings, along with others (see, e.g., Anderson and Berdahl 2002), indicate that power produces the subjective perception—whether accurate or inaccurate—that one has control over things that matter. This mechanism had the potential to lead to a number of benefits as well as costs when it comes to decision making. We will begin by examining the former.

Benefits Associated with the Elevated Sense of Control

Enhanced Goal-Directed Action An enhanced sense of control over one's environment allows the power holder to attend more closely to rewards in the environment (Anderson and Berdahl 2002; Keltner et al. 2003) and, as a result, engage in more goal directed action (e.g., Guinote 2007). An elevated sense of control causes power-holders to experience social situations as less constraining (Galinsky et al. 2008; Whitson et al. 2013), enabling the power holder to take action to meet goals and achieve desired outcomes. For instance, when primed with power, participants were more likely to turn off or move a disturbing fan placed in the laboratory (Galinsky et al. 2003) or indicate plans to vote in an upcoming national election (Fast et al. 2009). Other work has shown that experiencing power in a negotiation situation leads individuals to make the first move, a tendency that results in a bargaining advantage (Magee et al. 2007). These findings are consistent with the approach/inhibition theory of power, which asserts that power leads to behavioral approach tendencies whereas powerlessness fosters behavioral inhibition tendencies (Keltner et al. 2003). A mindset that fosters goal-directed action can aid decision making in a number of ways. First, it leads to increased goal setting and pursuit, which has been shown to improve performance across multiple situations (Locke and Latham 2002, 2006). Secondly, power leads people to make judgments and decisions quickly and with certainty, which improves performance in situations that call for quick and decisive action. Finally, an increased goal orientation can focus people's attention

on what action or actions are necessary, leading to improved performance on particular tasks (Guinote 2007; Overbeck and Park 2001, 2006).

Reduced Perceptions of Threat The elevated sense of control that comes with power also reduces perceptions of threat relative to those who lack power (Anderson and Berdahl 2002; Keltner et al. 2003; Scheepers et al. 2012). For example, Anderson and Berdahl (2002, Study 2) examined the effects of dispositional power on participants' tendency to perceive partners in a threatening manner. Participants who scored higher on personality dominance as well as those assigned to a high-power position tended to perceive their relationship with their interacting partner in a positive light (i.e., that their partner liked them and had fewer threatening emotions) as compared to participants scoring lower on personality dominance and those assigned to the lower-power position. The tendency to be free from perceived threat may be advantageous to those with power, as threat often clouds decision making and leads to sub-optimal choices (Gladstein and Reilly 1985; Staw et al. 1981). For example, threat tends to hinder the ability to learn from mistakes (Edmondson 1999) and hinders executive functioning abilities (Smith et al. 2008). Supporting the notion that power may lead to some of these benefits, the powerful, relative to the powerless, have been shown to demonstrate superior executive functioning, in part because they are free from the need to monitor their actions vigilantly in order to avoid negative consequences (Smith et al. 2008).

Reduced Temporal Discounting One of the barriers to effective decision making is a tendency to discount the future. Temporal discounting refers to the tendency to make decisions based on present considerations rather than considerations for how the decision would impact one in the future. For example, people tend to prefer to take a smaller sum of money in the present rather than wait for a larger sum of money in the future (Frederick et al. 2002; Kirby and Marakovic 1995). This tendency occurs, in part, because people feel high levels of uncertainty about and disconnection with their future selves (e.g., Ersner-Hershfield et al. 2009; Griskevicius et al. 2013). However, to the degree that power elevates a sense of control, it should reduce this uncertainty and, in so doing, help one feel more connected with one's future self. Recent findings support such an idea. In a series of studies, Joshi and Fast (2013b) found that power holders experience greater connection with their future selves, resulting in a greater willingness to wait for future rewards and sacrifice immediate rewards for long term benefits. For instance, when participants were primed to feel powerful, they were more willing to delay gains, opting for larger sums of money in the future ($ 120 in a year) in lieu of smaller sums of money in the present ($ 100 now). Further, in a field study, participants who experienced power in their workplace on a routine basis were more likely to delay immediate consumption and accumulated greater savings for their future. Additional findings by Griskevicius et al. (2013) demonstrate that high levels of socioeconomic status serve as a buffer against temporal discounting during times of economic hardship. In short, experiencing power, and thus control over one's outcomes, reduces the tendency to fall prey to temporal discounting.

Costs Associated with the Elevated Sense of Control

Illusory Control and Risk Taking The reduced sense of situational constraints experienced by power holders may result in an illusion of control, where power holders exaggerate the extent to which they have control over the environment, being excessively proactive in seeking rewards, even when they are beyond their control. For instance, Fast et al. (2009) informed participants that they would receive a $ 5 reward for correctly predicting the outcome of a single die and asked participants to indicate whether they would prefer to roll the die themselves or allow the experimenter to do so. Participants who were primed to feel powerful were more likely to choose to role a die themselves than allow the experimenter to do so. Similarly, participants primed to feel powerful were more likely to perceive a sense of illusory control over outcomes that were hard to control, such as the economy, than those who were not primed with power. Such illusory perception could prove damaging in certain decision making contexts.

Indeed, research findings suggest that power holders' tendency to overestimate their control results in greater risk taking propensity. For instance, participants primed with power reported being more willing to engage in unprotected sex (Anderson and Galinsky 2006). Participants primed with power were also more willing to reveal interests in a negotiation context because they perceived lower risks (Anderson and Galinsky 2006). The optimism and risk taking tendencies among the powerful may help explain why CEOs and top management teams frequently make bad decisions, such as pushing for ill advised mergers and acquisitions (Hayward and Hambrick 1997) or engaging in career-ending unethical behaviors that turn into public scandals (Thompson 2000). In sum, although an elevated sense of control is often adaptive, it brings with it several risks.

Social Misperception As noted earlier, not only do those high in power feel more optimistic about situations and outcome possibilities, they also feel more positive about interpersonal relationships (Anderson and Berdahl 2002). More recently, researchers found that participants who scored high on general sense of power or those who were primed to feel powerful were more likely to perceive that group members were allied to them, a phenomenon referred to as "the illusion of alliance" (Brion and Anderson 2013). This illusion of alliance was further associated with negative consequences for the power holder including losing power and social exclusion. In related work, Petit and Sivanathan (2012) found that experiencing elevated status leads people to perceive more applause and more favorable facial expressions in relation to their own performance. These types of perceptual tendencies are psychologically appealing, yet they can lead to faulty decision making, especially when accurate assessment of one's social network is necessary.

Overconfident Decision Making Power holders also tend to be overconfident about the accuracy of their decisions. For instance, participants primed to feel powerful were more confident about their responses to general knowledge questions than participants primed with low power; even when there was no difference in the accuracy

of their responses. In addition, participants who experienced greater power in their workplace and whose roles were made salient were willing to bet more money on their responses to trivia questions, a tendency which resulted in monetary losses (Fast et al. 2012b). The experience of power and the associated optimism has also been associated with reduced perceptions of threats and losses in the environment. Inesi (2010) shows that participants who are primed to feel powerful are less likely to be loss averse, such that they place greater emphasis on obtaining gains rather than avoiding losses as compared to participants primed to feel powerless. For instance, priming participants to feel powerful resulted in reduced motivation to avoid losses such as poor grades (Inesi 2010, study 2). Participants primed with power are less motivated to avoid undesirable outcomes as compared to participants who are primed with low power, even though power does not influence the motivation to seek desirable outcomes.

One can even think of real world examples where individuals in power such as the CEO of a company may turn a blind eye to threats in their environment resulting in losses for the organization. For instance, Kodak, the film and photographic equipment company, was slow to transition to digital photography, even when the technology involved in digital photography was invented by one of its own engineering teams. In spite of adequate market research data to suggest that the film photography business may soon be sidelined by digital photography, the top management team at Kodak ignored the potential threat to its core business and did not make changes to its technology. In 2012, this once leading photographic equipment manufacturer filed for bankruptcy.

This elevated confidence also leads the powerful to reject the advice of others (See et al. 2011; Tost et al. 2012). For instance, participants who were primed to feel powerful in experimental situations were more likely to ignore advice given by others than participants primed with low power or those in the control condition. Additionally, participants primed with power were less likely to modify their original estimations based on advice provided by others, irrespective of whether the advice was provided by expert or novice advice givers (Tost et al. 2012).

Thus, having power may predispose the individual to overconfident and risky decisions, particularly when the threats and risks in the environment are not salient. Yet, in many real world scenarios, the power holder may be forced to attend to threats and risks, which low power members of a team may be particularly aware of. To the extent that high power members of a team are getting inputs from other group members, they may be less prone to make inaccurate decisions. Furthermore, situational factors as well as individual level characteristics of power holder may moderate the relationship between power and risky decision making.

Power and Prescriptive Role Expectations

In the previous section, we examined a mechanism—subjective sense of control—that has received a fair amount of attention in the literature on social hierarchy. In this section, we examine a mechanism that has received less attention but, in our

estimation, is just as important: role expectations. The term social role refers to the set of expectations people have for a particular position (e.g., manager, administrative assistant) or social category (e.g., gender, race) (Ashforth 2000; Biddle 1979; Eagly 1987). When enacting a role, people tend to experience a great deal of pressure to fulfill the expectations associated with the role (Biddle 1979, 1986; Stryker and Statham 1985). Such expectations can be both *descriptive*, indicating people's beliefs about how most role holders behave, and *prescriptive*, indicating the behaviors people demand of role holders. Research and theoretical work on the psychology of power and status has indicated that social role expectations represent an important mechanism that can influence the behavior of individuals at the top of the hierarchy (Fast and Chen 2009; Fast and Gruenfeld 2013; Fiske and Berdahl 2007; Joshi and Fast 2013a). We review relevant findings here and discuss the potential benefits and costs of role expectations for decision making.

It is important to note that, in contrast to the idea that power increases pressure to fulfill expectations, power holders often behave in a liberated manner. For example, researchers have found that power increases feelings of authenticity and, and as a result, leads to psychological well being (Kraus et al. 2011; Kifer et al. 2013). Related to the research summarized in the previous section on the elevated sense of control, power often provides freedom from situational pressures (Galinsky et al. 2008) and fosters behaviors that stem from one's own internal goals and values (e.g., Bargh et al. 1995; Chen et al. 2001). Taken together, these findings seem to suggest that power liberates people from prescribed expectations. However, a growing body of research shows that having power can also focus individuals on the pursuit of situationally relevant goals, leading to behavior that is more consistent with the demands of the situation (Guinote 2008; Guinote et al. 2012; Overbeck and Park 2001). Thus, it appears that there are certain pressures and/or situation-based expectations that the powerful are more, rather than less, likely to internalize.

Recent findings indicate that one set of expectations the powerful are particularly likely to embrace are the expectations that are connected to their high-power roles (Fast and Chen 2009; Joshi and Fast 2013a). Consistent with the notion that people tend to feel pressure to meet the expectations associated with their social roles—especially when these roles have desirable attributes—Joshi and Fast found that infusing roles with power, while holding the actual role expectations constant, led to increased identification with the roles as well as behavior that was consistent with the role expectations. In short, to the degree that those at the top of the hierarchy perceive that there are expectations for their behavior, there is reason to believe that they will be influenced by these expectations.

One nearly universal expectation associated with high-power roles is that of the need for competence (Fast and Chen 2009; Fast and Gruenfeld 2013). Here, competence is defined as a general capacity to be effective and influential (Cuddy et al. 2008; Fiske et al. 2002; White 1959). To illustrate, in one study, individuals at the top of their organizational hierarchies reported feeling a stronger need to demonstrate that they had high levels of competence, but this effect only emerged in a condition where participants' high (or low) power roles were made salient (Fast and Gruenfeld 2013). In other words, it is not simply the case that people with a

high need for competence seek out and gain power (an alternative account for a correlation between power and the need for competence)—instead, or additionally, having power increases the need to demonstrate that one is a good fit for one's role (i.e., has high competence). Moreover, these authors found that experiencing a lack of competence when in a high-power role was threatening (also see Cho and Fast 2012; Fast and Chen 2009).

In this section, we will examine the impact of the need for competence on decision making. As in the previous section, we first focus on some of the positive consequences of this expectation and will then turn to some of the potential detriments.

Benefits Associated with High-Power Role Expectations

Increased Effort on Competence-Related Tasks One of the most important decisions people face is how to allocate their time and energy. As noted previously, emerging research suggests that individuals high in the hierarchy experience a greater need for competence relative to others and we suggest that this need will influence people's decisions about how much time and effort to give various tasks in an adaptive way. One such decision is whether or not to exert effort on tasks that demonstrate and/or improve competence. For example, workers often face the need to influence others. This could include pitching a new idea at work, persuading one's colleagues about the best course of action, or encouraging others to work harder. We suggest that, due to the increased need to demonstrate competence, high-power individuals will exert greater effort on these types of persuasive tasks. This is consistent with early work by Kipnis (1972) which showed that managers with power were significantly more likely than those without power to make active attempts to influence their subordinates.

There are ways in which increased effort to demonstrate competence will bring benefits to actors. Not only will the extra effort cause them to be more influential in the moment, it will also likely increase their overall persuasion skills and influence over others, which adds to performance and elevates social status over time. Relatedly, to get better at something, one must remain motivated to persist in the face of difficulties. These are often the instances where people and organizations learn the most (Sitkin 1992). We suggest that the expectations for elevated competence leads individuals at the top of the hierarchy to continue to exert effort, rather than give up, when tasks become especially difficult, leading to improved performance and abilities over time.

More Likely to Seek to Add Value to Group One of the ways people gain power and status in group settings is to add value to the group (Anderson et al. 2006; Willer 2009). In this way, making choices with the aim of demonstrating competence can help one to climb to the top of a hierarchy. Following this logic, one might expect that those at the bottom of the hierarchy would try to add more value to the group as a way to gain power and status. However, we suggest just the opposite: Placing someone in a position of power will result in greater pressure to benefit the group,

leading to decisions that result in more success for the group. For example, a group or organizational leader may be more likely than others to allocate long hours of personal time toward projects as a way to experience success. Additionally, group leaders must often face the decision of whether to avoid distasteful organizational politics or embrace them as a means of bringing more resources on his or her own department or division. The expectation that he/she must demonstrate competence increases the likelihood of making decisions to engage in political behavior, leading to more power and status as a result. Consistent with these ideas, Willer (2009) found that providing group members with status led those individuals to become more committed and give more to their group members in a social dilemma.

In a similar way, the need to appear competent may also influence how one chooses to treat others, at least to the degree that the performance of these others has implications for how others will view the power holder. Recent work by Ferguson, Ormiston, and Moon (2010), for instance, showed that participants primed with powerful roles were more likely to select proactive methods of training and confrontation when dealing with a poor performer in their team as compared to participants who were assigned to a low power role. Similarly, in a field study, individuals who had higher power in their organization were more likely to train a poor performer in order to help them improve their performance. They were also more likely to confront the poor performer than individuals who did not have power.

Importantly, the sets of group enhancing behaviors described above lead to benefits not only for the group but also the individual, who boosts individual performance and gains additional power and status in the process.

More Motivated to Learn and Grow Another way in which the prescriptive need for competence may beneficially influence decision making is to increase the likelihood of choosing to spend one's time on learning and growth activities. In particular, people in positions of power may become more likely to pursue educational and training experiences, as doing so would help them to establish greater competence. Similarly, they may be more likely to adopt and pursue challenging goals, such as stretch goals (Sitkin et al. 2011). Goal setting research shows that when people pursue challenging goals, they tend to gain new skills and perform at higher levels (Locke and Latham 2002, 2006). In sum, it is likely that the role expectation that one be competent when at the top of the hierarchy leads to new knowledge and new skills and abilities that aid in performance and serve to provide even more power and status.

Costs Associated with High-Power Role Expectations

There are also costs associated with role expectations. In fact, many have written about the stress and demands associated with being at the top (e.g., Mintzberg 1973, 2009; Pfeffer 2010). The same is likely true for the expectation that one have a high degree of competence. One key factor that can turn expected competence from a positive into a negative is whether or not one feels personally capable of

demonstrating such competence. As noted above, having power likely encourages those at the top to allocate their personal resources in ways that lead to learning, growing, and increased status in the group. However, when one feels incompetent, unable to learn, or that the environment blocks growth, expected competence may lead to negative consequences.

Ego Threat One potential detriment associated with prescriptive competence expectations is the tendency to experience ego threat when unable to meet the expectations. According to self-discrepancy theory (Higgins 1987), a failure to meet one's ought-related self standards is threatening and leads to anxiety. Consistent with these ideas, Fast and Chen (2009) found that power holders who lack self-perceived competence respond with ego defensive aggression (also see Cho and Fast 2012). When people are blinded by ego threat they often make decisions that are sub-optimal because they are more focused on assuaging the aversive state than they are on making sound decisions. For example, a recent field study showed that managers in a large multi-national company who lacked managerial self-efficacy were less likely than others to solicit and receive helpful input from subordinates (Fast et al. in press). This tendency to suppress voice has been associated with a number of maladaptive consequences (Edmondson 1999; Morrison and Milliken 2000). Another possible tendency among power holders with "something to prove" may involve attempts to expand their divisions or organizations so that they appear more powerful and competent. As noted earlier, such decisions to merge with and/ or acquire other companies are often maladaptive. In sum, lacking the perceived ability to meet the competence expectations associated with high-power roles can be threatening and, as a consequence, can hinder effective decision making.

Stress and Decision Making Beyond ego threat, the need to possess and demonstrate competence on a daily basis can create feelings of stress among the powerful, and this could lead to negative consequences. Existing research indicates that demands associated with one's role, although often positive, can produce stress (Meijman and Mulder 1998), which in turn often leads to negative consequences for health and well being (e.g., Sheldon and Wills 1985). Particularly relevant to the present chapter, researchers have demonstrated that stress also influences decision making. For example, stress reduces deliberative thought processes and leads to more automated decision making (Evans 2003; Kahneman and Frederick 2002; Reyna 2004) including increased risk-taking in loss domains and increased conservatism in gain domains (Porcelli and Delgado 2009). Given the need for reflective deliberation in the decision making process, this can lead to negative consequences. Although some research has shown that powerful leaders experience lower levels of stress than others (Sherman et al. 2012), other work has shown that the expectations associated with high-power roles can lead to heightened levels of stress (see Mintzberg 2009; Pfeffer 2010). Given these conflicting accounts, further research on the effects of stress on decision making among the powerful—when are the powerful most and least likely to experience stress, and with what effects—is warranted.

Effects of Decisions on Relationships Another possible challenge associated with increased demands and expectations is an increased difficulty in maintaining

positive relationships with others. The elevated pressure to demonstrate competence through their work-related performance may lead power holders to make decisions that involve "using" other people as a means to an end. As noted, research suggests that the powerful have a tendency to objectify others when pursuing goals (Gruenfeld et al. 2008). Other work indicates that the powerful tend to view people through the lens of agency (Cislak 2013). These tendencies can increase efficiency and bottom line results in the short-term, but they can also damage relationships, hinder trust, and reduce morale. In this way, the tendency to objectify and use other people as a means to the end of improving group or organizational performance can lead to negative interpersonal and organizational consequences.

Conclusion

The experience of being at the top of the hierarchy both provides individuals with a sense of control over the environment as well as creates a press for meeting role demands. These two factors associated with power influence decision making, resulting in a number of potentially positive and negative consequences. In this chapter, we have highlighted how these two mechanisms—sense of control and role expectations—influence decision making among power holders and indicate when and why power holders are likely to make good or bad decisions.

The experience of control as well as lower perceptions of social constraint experienced by the power holder may provide confidence to take action and pursue rewards in the environment. In addition, power holders are more flexible in their goal pursuit, being able to adapt flexibly to changing goals and reward sources. Yet, at the same time, they are likely to experience a sense of overconfidence and the tendency to ignore losses and situational constraints resulting in risky decisions and financial loss. Power holders may ignore threats in the environment, particularly when these threats are not salient, resulting in inadequate weighing of costs and benefits of decisions. Their tendency to ignore advice as a result of being overconfident in their own abilities may further perpetuate risky decision making.

As noted, power holders also tend to identify more strongly with the power-providing roles, leading to an increased need to meet role demands. A universal expectation associated with high-power roles is the need for competence, a demand that can have both positive and negative consequences. For example, power holders may seek to learn, grow, and add value to their groups in order to demonstrate competence and gain status in the eyes of others. However, the press for competence among power holders can also induce feelings of threat and stress, especially when one feels unable to meet one's role expectations.

The effects of power on decision making are moderated by situational factors, such as the extent to which the power hierarchy is perceived as stable as well as the perceived legitimacy of the power (Lammers et al. 2008). When power hierarchies are unstable, a factor that is likely to cause high power holders to be more sensitive to threats in the environment, high power individuals make less risky decisions than

low power holders (Sligte et al. 2011; Maner 2012). In addition, the personality of the power holder also influences the extent to which having objective power influences decision making. For instance, participants high in power motivation made less risky choices when given a high power role as compared to participants who had a low power motivation (Maner 2012). Along similar lines, participants with a high need for power are more likely to behave in ways consistent with role expectations associated with high power roles than participants with a low need for power (Joshi and Fast 2013). Thus, both individual and situational factors influence the effect of power on decision making.

Understanding the extent to which the effects of power on decision making are moderated by individual level and situational variables in real world organizations may allow researchers to provide clearer recommendations about ways in which people can shield against negative effects of power. Using survey methods and field studies, future research may benefit from examining the decision making of individuals who have power in work settings. It is also important to examine whether status and power differ in the extent to which they influence decisions and whether status moderates the effects of power on decision making.

Future research can also examine role expectations associated with high power roles and their influence on decision making. Competence is only one type of expectation associated with high-power roles. We chose to focus on this variable because it is perhaps the most universally held expectation for those in positions of privilege. However, future research should also consider how other expectations associated with elevated power and status that might be context and culture driven influence decision making. For example, if having a high-power role causes one to become aware of expectations that one behave ethically (such as in a well regulated environment or organization), it could lead to more ethical decision making. In contrast, if one has power in a domain in which power is associated with expectations that one act selfishly (such as in competitive environments or cultures characterized by corruption), power may lead to unethical decision making. These ideas have not been examined in the literature, but we think this type of question could lead to fruitful advances in the field.

Finally, future research should also seek to make a stronger empirical distinction between power and status. We have intentionally used the term power in this chapter to refer to the state of holding a position that is high in the social hierarchy. However, it is possible to have power without status and status without power (Magee and Galinsky 2008). Furthermore, the effects of power and status often interact to produce unique effects (Blader and Chen 2012; Fast et al. 2012a ; Fragale et al. 2011). The first mechanism we examined in this chapter—the sense of control—is likely to emerge under conditions of high status. Thus, we would expect status and power to lead to similar effects associated with an elevated sense of control. Similarly, because of the link between competence and status, it is likely that high-status roles come with the need to demonstrate competence. Thus, high status roles likely produce some of the same positive and negative tendencies associated with the need for competence. Where we would expect to see some interesting effects is when power and status are incongruent. In particular, when power holders lack status, we

would expect to see the sense of control diminished, thus eliminating the effects we described in the present chapter. In the case of competence, we would expect power holders who lack status to feel more threatened, leading to greater tendencies to treat others in negative ways (e.g., Fast and Chen 2009; Fast et al. 2012a). In sum, future research should further investigate both the main effects as well as the interactive effects of power and status on decision making.

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Chapter 12
Social Categories Create and Reflect Inequality: Psychological and Sociological Insights

Michael S. North and Susan T. Fiske

Social Categories Can Create and Reflect Inequality

As much as we might resist, we are often quickly reduced to categories. In interpersonal impressions, frequently one is what one does: "I'm an investment banker" connotes something distinct from, "I'm a construction worker." Sometimes there is utility in categorization, such as when police narrow their suspect search based upon a description of age, gender, and race. Nevertheless, rapid interpersonal categorization creates simplistic, unindividuating consequences, reducing us to a mere fraction of our intrinsic complexity, treated as interchangeable with other members of that cluster. And clusters differentiate by social status, which is one of the main reasons we resist them.

This chapter emphasizes this latter, unfortunate side of social categories. After all, not all categories are created equal: Tall and attractive people enjoy well-documented benefits. Overweight and quiet people tend to be underappreciated. Women and minorities have faced historical uphill battles to equal societal benefits. How do we make sense of these power and status imbalances? How do macro, overarching forces, and individual, perceiver biases each contribute?

In discussing these issues, we focus on perspectives deriving from two branches of social psychology: classic sociological social psychology and prevailing psychological social psychology. Both fields delineate how inequalities result from deindividuating people into broad social categories. At the same time, the fields diverge: Whereas sociologically-oriented social psychologists have long focused primarily on how categories foster "inequality" for specific social targets, psychologically-oriented social psychologists tend to focus on the "prejudices" inside the mind of social perceivers. Clearly understanding both perspectives allows the most robust understanding of category-based disparate social outcomes. Fortunately,

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researchers in both fields have begun to recognize the potential benefits of drawing from one another, issuing a call for increased collaboration (Eagly and Fine 2010). Moreover, existing work has already begun to draw from both sides, as we discuss in this chapter.

The chapter starts by noting some classic sociology relevant to inequality, and then some related classic (and recent) psychology on prejudice-based inequality, focusing on mechanisms of interpersonal fluidity and cognitive economy. Then we turn to social (Fiske et al. 2002) categories that often yield inequality, introducing the stereotype content model as a conceptual framework, and then describing the psychology of reactions to the most salient categories (race, gender), as well as less-studied ones (age, disability, sexuality, social class, and weight). We then note some broader psychological perspectives about who uses these categories, drawing from individual differences in societal attitudes, as well as from social cognition (automaticity, ambiguity, ambivalence, complexity). We close with future opportunities for studying social categories.

Classic Sociology: Categories (Indirectly) Foster Structural Inequality

To this day, sociological and psychological social psychology each are fundamentally concerned with how people get categorized and sorted, both by inherent characteristics (such as race and gender) as well as those that are more controllable (Foner 1979; Lieberson 2001).

But whereas the construction of social categories has a formative history in sociological social psychology, the idea that social sorting fosters *inequalities* came about indirectly, as inequality was not the primary concern of the field's theoretical innovators. Perspectives on category-based inequalities do date back to at least the late 1800s, when the French sociologist Emile Durkheim (1893/1964) first introduced the notion of *collective/common conscience*, underscoring how societies maintain social order by shared thinking. For industrialized societies, a major part of common understanding centers on labor division among citizens, and the shared understanding that certain work will be rewarded more than others. Although this has the consequence of strengthening society as a whole, status inequalities may emerge, due to inevitable differences in valuing labor.

Later sociological theories built upon the seminal idea that groups need shared values systems to flourish—again, showing indirectly how status imbalances can result from these systems. Resembling Durkheim's perspective, Moscovici's (1963) *social representation theory* proposes that social groups (including the larger society) use a simplified, shared system of particular values, ideas, and practices to establish order, facilitate group member communication, and make sense of novel or troubling events. Whereas this implies the collective ability to simplify a complex world, inequality and exclusion (e.g., racism) can result from oversimplification of outgroup images (Potter and Wetherell 1998).

Other classic works focus on the importance of societal roles, once again demonstrating indirectly how they foster unequal categories. Dahrendorf's (1968) conception of *homo sociologicus* de-emphasizes narrow self-interests, instead emphasizing people's motive to fulfill roles in a broader social framework. This role orientation inevitably creates inequalities, given the fundamental unevenness of industrialized roles. As a more specific example, Talcott Parsons' depiction of the *nuclear family* includes the complementary roles of industrious men versus nurturing women; though designed to alleviate competition, these functions nevertheless foster gender stratification (Parsons and Bales 1955). Admittedly, people sometimes attempt to dissociate themselves from stereotypes associated with their own role, implementing *role distancing* (such as a surgeon who jokes at the operating table to separate him/herself; Goffman 1972), especially if they perceive role-based inequalities as inhibiting their interpersonal relationships. Nevertheless, sometimes one's social role is too powerful to overcome, as reflected in the influential concept of the *self-fulfilling prophecy* (Merton 1948). All this is to say that sociologists have long considered categories and inequality.

Perhaps the most currently influential classic theory of categories is *status characteristics theory* (e.g., Berger et al. 1972; Ridgeway 1991), which argues that certain categories (e.g., being white, male, middle-aged) create expected competencies that create dynamics making self and others respond with dominance and deference accordingly, thereby perpetuating category-based status inequalities in prestige and resources. This approach fits well with psychological approaches that emphasize social categorization.

Classic (and Recent) Psychology: Prejudice-based Inequality

Psychologists have long considered categories but only more recently considered their status per se. Psychologists seldom use the term *inequality* directly. Instead, the psychological conversation on social discrepancies often begins with Gordon Allport's classic definition of *prejudice*: "an antipathy based on faulty and inflexible generalization […] directed toward a group or an individual of that group" (1954, p. 9). To this day, social psychologists continue to grapple with how social categories foster the antipathies (and other, more mixed emotions) that permeate particular intergroup perceptions and interactions. Although prejudice is not the only psychological explanation for status inequalities, it is often implicated as the primary one—with theories of group-based power relations a close sibling.

Various elements of psychological social psychology utilize *functional* perspectives to explain how people's prejudices hold apparent psychological utility. This explains not only how inequalities form, but also how they persist. Two types of functional theories are particularly elucidating: early *interpersonal fluidity* theories, and later *cognitive economy* theories.

Interpersonal Fluidity

The first contribution of psychological experimental social psychology was to demonstrate how flexible people are, both in the categories they expect others to fit—despite objective reality—and in how they influence others to respond accordingly—despite their own individuality. That is, people misperceive others to fit categories more than they do, and then influence those others to fit those categories, showing that both perceivers and targets are flexible. All this categorical flexibility can be explained without recourse to motivation, namely, by the perceiver saving mental effort and by targets not bothering to resist. (These cognitive-economy principles are elaborated next.)

Reminiscent of self-fulfilling prophecy, but more psychology-specific, the role of expectations in fostering inequality is apparent in the idea of *behavioral confirmation*—the surprising impact of perceiver expectations on target behavior in an upcoming interaction. For instance, if a perceiver expects a target to be hostile, this can subtly cue the target actually to act in more hostile ways (Snyder and Swann 1978). This is often conveyed nonverbally. Expectancies, based for example on race, can cause a White interviewer to exhibit less nonverbal immediacy; this in turn undermines the performance of the interviewee, causing both to feel that the interaction did not go well and that the other performed inadequately, confirming mutual racial stereotypes (Shelton and Richeson 2006; Word et al. 1974). Whether a perceiver's expectancy ultimately shapes a target's behavior depends upon a host of factors, including both the perceiver's and target's separate interpretations of the target's behaviors (Darley and Fazio 1980).

Cognitive Economy

Later functional theories focused on how category-based responses emerge from the preference for cognitive economy—in other words, people are *cognitive misers* who strive to conserve mental resources when navigating the social world (Fiske and Taylor 2013). By default, this conserving priority spurs people to pigeonhole others into broad categories, fostering inequalities. Nevertheless, sometimes people can override these automatic biases if sufficiently motivated to do so. In psychological social psychology, these two sides of the coin have given rise to a series of influential dual-process models of interpersonal perception, comprising both automatic biases and more deliberate, controllable processes that allow people to override them (e.g., Brewer 1988; Brewer and Harasty Feinstein 1999; Devine 1989).

As an example, the Continuum Model (Fiske et al. 1987; Fiske and Neuberg 1990) theorizes that people form impressions on a continuum ranging from basic, automatic categories (age, gender, race) to elaborated, deliberate combination of aspects (individuating data). Beginning at the automatic end, people decide how far along the continuum they do go based upon their particular information and

motivation, with evolving elaboration of processing. Thus, both Gestalt configural processes (category-based impressions) and piecemeal, algebraic processes (individuating impressions) are at work.

Physical features matter as well in automatic, interpersonal categorization, from ethnic characteristics to clothing (Stangor et al. 1992). Perceivers generally attune most to the most informative physical aspect, such as clothing style over color, or the combination of race and gender as opposed to either on its own. Other factors also matter in which categories are most saliently activated, such as the perceiver's availability of attentional resources and general pre-existing attitudes (Macrae and Bodenhausen 2000).

Social Categories Often Yield Inequality

The role of categorization—Allport's "nouns that cut slices"—is clear from both sociology and psychology, but the societal structure and comparison of common categories was incomplete. Appearing next is progress in understanding stereotype contents, their origins in social structure, their emotional concomitants, and the downstream discrimination.

Stereotype Content Model

Psychological research using the stereotype content model (SCM; Fiske et al. 2002) indicates that the dimensions of perceived *warmth* and *competence* are fundamental in people's perceptions of social groups. The warmth dimension answers the question: "How friendly and trustworthy are this other's intentions?" which is the more immediate judgment that people make. The competence dimension answers the secondary question: "How well can this other enact those intentions?" From a simple classification along these two dimensions, four distinct clusters emerge, categorizing different social groups, with associated emotional prejudices (see Table 12.1): pride (high warmth, high competence, e.g., middle class), pity (high-low, e.g., older people), envy (low-high, e.g., rich people), and contempt (low-low, e.g., homeless people). This framework generates a society's social category map, applicable to the societal, interpersonal, and even neural level (Fiske et al. 2007). This perspective is similar to sociological social psychology, in its focus on the sociostructural origins of categories and the power of societal stratification systems (Massey 2007).

From the SCM's two dimensions, different forms of inequality emerge. Generally, warmth is dictated by groups' *interdependence,* or how cooperative-competitive groups appear. On the other hand, perceived competence correlates highly with status (in other words, people believe that "you get what you deserve" in society). Status of course speaks to inequality, but interdependence does too, as when one prioritizes the cooperative ingroup over the competitive outgroup, regardless of status.

Table 12.1 Typical stereotype content model distribution of group categories across warmth x competence space, as predicted by social structure, resulting in emotions and behaviors

Stereotype (Structural predictor)	*Low competence* (Low status)	*High competence* (High status)
Behavioral tendency	*Passive harm (neglect, ignore)*	*Passive help (associate, go along to get along)*
High warmth Active help (help, protect)	Older, physically disabled, mentally disabled, traditional women	Americans, middle class, heterosexuals, whites, Christians
	Pity	**Pride**
Low warmth Active harm (attack, fight)	Poor backs, poor whites, homeless people, immigrants, drug addicts	Rich people, white professionals, black professionals, lesbians, career women
	Disgust	**Envy**

Moreover, the SCM clusters predict different types of behavioral tendencies, as a result of emotional prejudices (see Table 12.1): Warmth stereotypes (associated with pride, pity) determine active behavioral tendencies, eliciting active facilitation (helping, defending). Low warmth (cold stereotypes, associated with either envy or disgust) trigger the opposite active harm behaviors (harassing, bullying). Competence stereotypes (associated with either pride or envy) determine passive behavioral tendencies, eliciting passive facilitation (associating, complying). Low-competence stereotypes (associated with either pity or disgust) elicit passive harm (neglecting, excluding). Although themselves predicted by the stereotypes, the emotions are the proximate cause of the behavior (Cuddy et al. 2007).

Most relevant here, societies differ in their usage of the mixed, ambivalent clusters (low on one dimension and high on the other) (Cuddy et al. 2009; Durante et al. 2012). In 3 dozen societies, greater societal income inequality predicts more ambivalently stereotyped societal groups, consistent with an unequal society's need to justify group advantage or advantage (allegedly, "older people are poor but nice"; "investment bankers are rich but cold"). Ambivalent stereotypes may sustain systemic inequality.

Drilling Down to the Dynamics of Particular Categories

Referring, where relevant, to the stereotype dimensions warmth/interdependence x competence/status, we next identify several specific categories that social psychologists have implicated in social inequality. We start with the two that have garnered the most focus (race and gender) and then less-studied ones (age, disability, sexuality, social class, and weight). Afterward, we return to broader perspectives on individual determinants of category usage.

Race

Primarily, psychological social psychology has focused on Black and White categories of inequality. In fact, some of the first studies in social psychology measured self-reported stereotypes of and attitudes toward different racial and ethnic groups (e.g., Bogardus 1933; Katz and Braly 1933; Thurstone 1928). This is similar to sociological social psychology, which has focused on race essentially since its inception (Winant 2000).

Later psychological work became more nuanced, in distinguishing between subtle forms of racism and its more blatant manifestations. Typically, old-fashioned forms of race prejudice are overt; by contrast, the Dovidio–Gaertner idea of *aversive racism* (Dovidio et al. 1986; Gaertner and Dovidio 1986) speaks to a more common, subtle form of prejudice that may go unnoticed even by its perpetrators. Aversive racism combines negative feelings and beliefs toward the outgroup along with paternalistic sympathy and denial of one's underlying negative attitudes (see also Katz et al. 1986). Even in the absence of blatant racism, more aversive forms create deleterious consequences, such as inhibiting voluntary interracial contact (Dovidio et al. 2002) and fostering pro-White-biased hiring decisions (Dovidio and Gaertner 2000). Covert-overt prejudice distinctions have emerged in studies of other types of ethnic prejudice, too, and across multiple countries (Pettigew and Meertens 1995).

Sociologists have similarly unearthed the powerful impact of subtle racial prejudices. One recent, landmark field experiment sent pairs of equally qualified job applicants (White versus Black or Latino) to seek low-wage jobs; not only were Black candidates half as likely to receive a callback or job offer, but minority applicants were equally likely as Whites with prison records (Pager et al. 2009). Such experimental field research is a likely future direction for sociologists and psychologists alike, as both share an interest in real-world consequences of racial discrimination—which typically manifests in ways more covert than overt (Pager 2007).

From the perspective of stereotype content, low-wage African Americans appear in the low-low part of the warmth x competence space, but so do poor Whites (Cuddy et al. 2007; Fiske et al. 2002). Likewise, Black professionals appear between generic competent-but-cold (presumably White) professionals and warm, competent genre middle class (also presumably White). Increasingly, the intersection of class and race will trump the simple category of race, and research will increasingly recognize the importance of subtypes (e.g., African Americans' own subtypes for Blacks, see Fiske et al. 2009). Nevertheless, recent work offers hope for combating race-based identity threat in various domains (e.g., Cohen et al. 2012; Sherman et al. 2013).

Gender

Long after the race studies came investigations of sexism, which continues to be the second most frequent form of prejudice studied in psychology (APA 2012). Classic

social psychological studies of gender prejudice uprooted long-held beliefs about innate gender inequalities. Until the late 1960s, the most prevalent explanations treated masculinity and femininity as polar opposites and assumed that biological gender differences solely accounted for gender inequalities. Then came others proposing a more nuanced approach, treating the two gender concepts as socially defined and complementary, rather than innate and opposing (Deaux 1984; Deaux and Major 1987).

These influential, novel perspectives resulted in one of the earliest sexism measures, the Attitudes toward Women scale (ATW; Spence et al. 1973). Along with acting as a systematic, psychometric evaluation of gender stereotypes, the ATW also identified factors involved in how people come to endorse traditional sex roles and related inequalities. For instance, traditional male-female power hierarchies tend to be endorsed by particularly masculine men and feminine women, rather than more androgynous individuals (Spence et al. 1975).

Later work on gendered roles and resulting inequalities emerged from Eagly's (e.g., 1987) *social role theory*. Similar to sociologists' classic emphasis on social roles, and expectations states theory in particular, Eagly's approach stated that perceptions of social groups derive from the societal parts that they each disproportionately play. From this standpoint, perceptions fostered by traditional gender roles can appear to legitimize gender imbalances. For instance, because traditional gender division of labor more often places women inside the home, they are consequently perceived as low in agency. Such perceptions are surprisingly powerful in dictating gender-based behavioral expectations, even impacting the perceived effectiveness of leaders (depending on the extent to which job descriptions are framed in masculine terms; Eagly et al. 1995).

Gender prejudice investigations were also integral in revising Allport's original definition from pure antipathy to incorporate mixed reactions that include allegedly benign intent—as reflected in *ambivalent sexism,* which comprises both subjectively benevolent and openly hostile forms (Glick and Fiske 1996). Ambivalent sexism results from the tension between male societal dominance and male-female intimate interdependence. As such, some forms of sexism derive from subjectively *benevolent* intent—for instance, chivalrous behaviors (e.g., a contextually inappropriate compliment on attractiveness, subtly undermining competence) that nonetheless paternalize women as inferior. On the other hand, a negative, *hostile* side emerges if women are perceived as violating their prescriptive gender roles (Rudman and Glick 2001). Indeed, the endorsement of low-competence female stereotypes, traditional gender roles, and differential gender-based treatment reflects a modern neosexism similar to its race-based counterpart (Swim et al. 1995; Tougas et al. 1995). The domain of feminist sociology has touched on many of the same themes (e.g., Ingraham 1994).

What underlies the ambivalence are "should"-based, *prescriptive* gender stereotypes, which attempt to dictate how women ought to behave, fulfilling traditional gender roles (Burgess and Borgida 1999; Prentice and Carranza 2002; Rudman 1998). When women behave according to role-based expectations, they face default, benevolent sexism; when women do not comply, they put themselves at risk

for hostile backlash. For instance, when women act in threateningly agentic ways (countering expectations for being nice), they risk being passed over for jobs (Carli and Eagly 1999; Eagly and Karau 2002; Rudman and Glick 2001).

Prescriptions tend to arise when groups are deeply interdependent (as men and women are); when groups need each other and interact regularly, and when the subjugation of one group directly benefits the other, the potential beneficiary has a vested interest to employ controlling stereotypes (Burgess and Borgida 1999; Pratto et al. 1997; Snizek and Neil 1992). The predominant contrasts in female stereotypes—traditional and subordinate versus nontraditional and competitive—also fit the stereotype content data showing these types as respectively nice but incompetent versus competent but cold (Eckes 2002; Fiske et al. 2002). Again, the recognition of intersections and subtypes will likely move research closer to lived experience.

Less-Studied Categories

More rarely, psychological investigations center on age, disability, sexuality, social class, and weight.

Age   Though Robert Butler originally coined the term "ageism" in 1969, empirical and theoretical investigations are surprisingly sparse. Moreover, the majority of theoretical perspectives on the subject are general theories to explain a wide variety of other biases (North and Fiske 2012). One of the most common such approaches to ageim is *terror management theory* (Becker 1973), which focuses on people's reactions to death anxiety and consequent motivation to maintain physical and psychological distance from older people (Greenberg et al. 2002). Another prominent social psychological theory used to explain ageism, *social identity theory* (Tajfel and Turner 1979), characterizes age prejudice as a means of maintaining self-esteem (i.e., identifying more strongly with young, ingroup members and pushing away older, outgroup members).

Other general perspectives adapted for ageism focus on physical characteristics in driving age-based stigma. One example of such stigmatizing trait inferences is *negative halo* effect, in which older people's perceived unattractiveness taints other trait judgments; another involves *overgeneralization*, in which certain traits are mistakenly inferred from mannerisms, such as loneliness from stooped posture. Yet another physical behavior-driven stigma derives from social *affordances*; in this sense, elders' slow gait might signal low-interaction potential (Palmore 2003).

Other general theories apply more broadly at the group level. An intragroup relations-based, *sociofunctional* perspective posits older people as nonreciprocating, which may foster anger and resentment among other group members (Cottrell and Neuberg 2005). *Sociohistorical* accounts cite historical causes that have rendered older people as a relatively useless social group (e.g., the advent of the printing press, the industrial revolution, improved education, and better medical care; Cuddy and Fiske 2002; Nelson 2005). Similarly, the already-noted social-role perspective (Eagly 1987) would link older people's predominant societal roles (e.g., retired) with stereotypes (e.g., low agency; Kite and Wagner 2002).

Also taking into account the role of social structure in fostering elder perceptions is the *stereotype content model* (SCM; Fiske et al. 2007; Fiske et al. 2002). As a group, older people are a social group spurring *pity:* perceived as high in warm intentions (friendly, trustworthy) but low in competence (unable to enact those intentions). These perceptions stem from older people's default social standing as low-status and noncompetitive (Cuddy et al. 2005).

The default pity response presupposes the predominant structure of age groups, which fosters expectations for age-group turn-taking. Typically, younger and older people take a low-status backseat to middle-agers, whose relative prosperity is both recognized and legitimized across age groups (ESS 2008; Garstka et al. 2004, 2005). We implicate this progression in driving prescriptive expectations among the young for older people to step aside and make way for younger generations (North and Fiske 2012). Thus, like the SCM, this kind of multilevel psychological perspective takes into account how structural relationships between groups predict psychological downstream reactions, and how interdependence and status are major drivers of stereotypes, emotional prejudices, and discriminatory behavior (e.g., Fiske et al. 2007).

Recent developments in ageism propose a more "should"-based, prescriptive form, which subtly nudges older people aside to make way for younger generations (North and Fiske 2012, 2013a). These tensions comprise at least three distinct domains: active *Succession* of enviable resources (wealth, employment), passive *Consumption* of shared resources (government funding, public space), and avoidance of symbolic *Identity* resources (activities or roles traditionally reserved for younger people). When older people do not conform to expectations concerning these practical and figurative resources, they risk facing resentment from aspiring younger people eager to maintain or enhance their own social standing.

Like many groups in the stereotype content space, age-based prejudice is commonly ambivalent, deriving from the perception that older people are high in warmth but low in competence (Cuddy et al. 2005), typically relegating them to a low-status societal position. Similar to ambivalent sexism, this default, subjectively benevolent perception has the potential to transform into something more hostile if elders are perceived as violating prescriptive age stereotypes (such as delaying retirement and blocking younger people from entering the workforce) or something more benevolent, if elders cooperate with stereotypic injunctions to step aside (North and Fiske 2012, 2013a).

Disability Research on disability prejudice has often been closely linked with stigma. In one classic study, participants were assigned to interact with another person—a confederate—who either ostensibly was missing a leg (thanks to a specially constructed wheelchair) or was not. People were far more likely to choose to cut short the interaction with the ostensibly handicapped person, and indicated a greater level of discomfort (Kleck 1966).

One explanation for people's uneasiness with the physically disabled is the novelty associated with the disability (Langer 1976). However, an important mediating factor in this perception is whether or not the disability is perceived as controllable (Weiner et al. 1988); similar to physical illness-based stigma, ailments that

are viewed as controllable are most likely to yield social rejection (Crandall and Moriarty 1995). In the stereotype content space, people with physical disabilities land in the pity quadrant, as do people with developmental delays or dementia, consistent with a bad outcome that is not their fault (Weiner et al. 1988), but drug addicts (arguably a mental disability) land in the disgust quadrant, consistent with blaming them for their condition (Cuddy et al. 2007; Fiske et al. 2002).

Sexuality Sexuality often drives inequalities, as anyone following the current political climate can attest. Until recently, the majority of American adults have believed that homosexuality is wrong and unnatural (Herek and Capitanio 1996; Herek and McLemore 2013). In fact, a common explanation for such prejudice is perpetrators' underlying discomfort with their own sexual impulses or gender (non)conformity (particularly among men; Herek 2000). Holding prejudice toward homosexuals may also serve a self-esteem purpose of reinforcing a positive sense of oneself as a "good Christian" (Herek 1987).

Nevertheless, various indicators suggest that sexuality-based prejudices are on the decline. The political zeitgeist of the early 2000s has resulted in a massive increase in states allowing gay marriage. Heterosexuals who believe in the immutability of sexual orientation tend to be less prejudiced toward homosexuals, feeling that they cannot change the way they are (Hegarty 2002). In the stereotype content space, generic gay men are rated neutrally on both dimensions, but a closer examination suggests this to be an averaging across common subtypes (Clausell and Fiske 2005). Lesbians are generally rated as cold but competent, along with other women who challenge traditional gender roles (Eckes 2002). Whereas sexuality studies have predominantly emerged in psychology, a call for increasing sociological approaches has emerged as well, given the field's closely related focus on gender (Stein and Plummer 1994).

Social Class Despite boasts of the United States' classless society (characterized by American Dream ideals that anyone can be successful by working hard), social class categories undoubtedly maintain social inequalities. For instance, recent psychological research has found that first generation college students demonstrate greater interdependent motives for attending college (e.g., "bring honor to my family") than do continuing generation college students. On the other hand, the latter seek to fulfill more independent motives (e.g., "explore potential in many domains"). Nevertheless, colleges tend to focus disproportionately on independence, presenting a *cultural mismatch* that fosters subtle inequalities (Stephens et al. in-press).

Even though Americans do not overwhelmingly identify as middle class (contrary to popular belief, people split equally between working and middle class), Americans do broadly endorse work-ethic values to explain social-status disparities (Fiske 2011). Applied to perceptions of poor people, these shared values mitigate the default prejudices against poor people, who are normally viewed as having uncooperative, exploitative intent, as well being generally incompetent (Fiske et al. 2002; Russell and Fiske 2008). Homeless people in particular are especially viewed with disgust (Harris and Fiske 2006). However, when a low-income person is specifically described as hard-working, that person is given more credit than a

hard-working rich person (Russell and Fiske, under review). Social class too has its subtypes.

A neglected topic is images of the rich, who universally land in the competent-but-cold quadrant of stereotype content; they elicit envy, which leads too Schaden-freude, malicious glee at their misfortunes (Cikara and Fiske 2012). Although psychologists are just beginning to investigate social class as an important phenomenon driving social inequalities, sociology has an established tradition of doing so. In particular, sociologists have spent considerable focus on the rise in concentrated disadvantage in the inner cities, which has resulted in a loss of upward mobility for many in the lower class (Wilson 1987).

Weight Also under psychology's radar is the role of people's body mass in fostering antifat prejudice (Crandall 1994). Weight bias permeates various sectors—even healthcare circles specializing in obesity (Schwartz et al. 2003)—and spans at least five continents (Crandall et al. 2001). Common correlates of antifat beliefs are blame, conservative political attitudes, and belief in a just world, suggesting that people legitimize weight-based inequalities as righteous punishment of social deviants (Crandall and Biernat 1990). Although never to our knowledge studied in the stereotype-content space, obese people elicit disgust reactions consistent with the default being to blame them for their condition (Krendl et al. 2006).

Who Uses Categories and When?

Thus far, this chapter has noted general sociological and psychological approaches to category-based status differentiation, as well as describing general societal dimensions of specific outgroup stereotypes that differ on status/competence and warmth/interdependence, both within the stereotype content model and within the respective category literatures. We now turn to moderator variable: individual differences and circumstances that encourage or discourage category use.

Individuals Differ in Endorsing Structural, Group-based Hierarchy

Certainly the SCM is not the only example of psychology successfully examining the social structure of hierarchy. Another example is *social dominance theory*, which we here limit to social dominance orientation (SDO; Sidanius and Pratto 1999), identifying how people's beliefs about group hierarchies legitimate systemic inequalities. Going beyond mere ingroup-outgroup factors, the theory explains how certain people are more predisposed than others to endorse the mere idea that some groups are better and more deserving than others (encapsulated by measurement items such as "Some groups of people are simply inferior to other groups" and "If certain groups stayed in their place, we would have fewer problems"; Pratto et al.

1994). Thus, the theory takes into account both the sociostructural elements (how groups are organized), and their impact on individual worldviews. SDO moderates beliefs that status and competence are virtually equivalent (Oldmeadow and Fiske 2007).

Individuals Differ in Justifying the System

In a similar vein, *system justification theory* (Jost and Banaji 1994; Jost et al. 2004) posits that people prefer sociostructural, organizational ("system") stability, rather than equality between social groups, and thus explain societal rank accordingly. System justification endorsement differs across individuals. System justification may relate to one part of SDO, opposition to equality beliefs (the other part, general "group-based dominance," is closely tied to one's social identity beliefs that spur ingroup favoritism; Kugler et al. 2010). System justification theory predicts that, although ingroup favoritism is typical, low-status groups may actually favor high-status ones, to perpetuate system stability.

When Do People Categorize? Perspectives from Social Cognition

Social cognition research specializes in gauging how social actors perceive the social world. Getting inside the heads of social perceivers, as they are making sense of the social world, suggests when people use categories: when they are often automatic, sometimes ambiguous, and ultimately complex.

Automaticity of Social Categories

As noted earlier under general psychological theories, dual-process frameworks conceptualize people's tendency to prefer automatic impressions of others. Indeed, when we first encounter another person, we immediately infer race, gender, and age (e.g., Fiske 1998; Kite et al. 1991; Kunda 1999), the first step in status divides. Although this categorical ability helps people make quick sense of their social world, it also has the unfortunate consequence of triggering status-maintaining stereotypes and prejudices. Nevertheless, depending on their individually and contextually primed goals and motives, people can overcome these automatic categories under certain circumstances.

General Automaticity Target people belong to several social categories, and automatic processes determine when perceivers use which ones. Particular categories may seem more or less relevant in the mind of the social perceiver; ones that are frequently primed are *chronically accessible* (Bargh et al. 1986; Higgins et al.

1977). Individual differences factor heavily in which categories become chronically accessible; for instance, different people value different traits (e.g., intelligence) in evaluating others and thus more likely remember and describe other people in those terms (Higgins and King 1981). Chronically accessible social categories matter too (Zárate and Smith 1990); for example, given limited information, some people rely on existing, chronic gender schemas when judging advertisements for female political candidates (Chang and Hitchon 2004).

More recent work uses event-related brain potentials (ERPs) to underscore how quickly people differentiate among social categories. For instance, people spontaneously attune particularly to other people, reacting more rapidly than to nonhuman counterparts (Ito and Cacioppo 2000; Ito et al. 1998). Related work shows that people make similarly rapid Black-versus-White and male-versus-female distinctions from the first moments of perception (Ito and Urland 2003). The automatic categorizations evidently occur regardless of individual motives because of shared cultural context.

Automatic categorization is one process; spontaneous bias is another. Perhaps the most powerful demonstration of how accumulated cultural experience makes people associate other groups with certain (often negative) evaluation is the *implicit association test* (IAT; Greenwald et al. 1998, 2002; Nosek et al. 2007). For an array of social categories, this prominent method has shown how people more readily associate certain social groups with positive words (e.g., Whites and nice) and others with negative words (e.g., Blacks and hostile)—though this effect is stronger for White participants than Black ones (Nosek et al. 2002). Although some have criticized the IAT as simply assessing widely-known cultural beliefs, and others have questioned whether it truly measures attitudes (as opposed to mere cognitive associations), arguably no other individual paradigm has spurred as much work on the unconscious processes linked to social category information. And the IAT predicts interpersonal feelings, decisions, and behavior, so it behaves as attitudes do.

Race-Specific Automaticity Part of social psychology's "dual-process" movement, Devine's *dissociation model* (1989) distinguishes between automatic and controlled processes in stereotyping. On the automatic side, *stereotype activation* does not require conscious attention—and seems inevitable whenever a White perceiver encounters a Black person or a symbolic representation of one, due to shared cultural knowledge of racial stereotypes. However, the other half of the model acknowledges that individual *personal beliefs* that can overcome stereotype activation if the individual were sufficiently motivated and able to do so.

Recent studies of implicit racial bias corroborate Devine's model. For example, demonstrating the automaticity of culturally held, racial stereotypes, people more rapidly identify guns and more readily misidentify tools as guns when primed with Black faces than White ones (Payne 2001). However, demonstrating the more controlled side of the model, over time people can learn to override implicit biases. For example, in a simulated decision-to-shoot task involving Black and White targets, highly trained police officers are less trigger-happy than ordinary civilians in identifying the correct targets to shoot, despite being similarly prone to automatic racial bias (Correll et al. 2007). Such work shows that motives and goals do matter.

Face-Specific Automaticity Underlying most social categories, the human face is one source of interpersonal categorization. Even with exceptionally short exposures to emotionally neutral faces (as little as 38 ms; Bar et al. 2006), people automatically evaluate faces on multiple trait dimensions, composing two overall dimensions: *trustworthiness* and *dominance* (Oosterhof and Todorov 2008). Spontaneous face judgments portend a variety of social ramifications, including criminal sentencing decisions, where faces with more stereotypically Black features are more likely to receive a death sentence (Eberhardt et al. 2006). Facial judgments of (male) competence predict political election outcomes with almost 70 % accuracy (Ballew and Todorov 2007; Todorov et al. 2005), though such judgments can also be skewed depending on skin tone (Maddox and Gray 2002). Despite little evidence that facial judgments reliably predict abilities (apparent face-based competence does not predict actual competence), these often arbitrary judgments foster real social inequalities.

Even within the face, eye gaze direction influences automatic interpersonal categorical judgments. People more rapidly gender categorize targets with direct eye gaze (Macrae et al. 2005). That is, people most rapidly discern the gender of those most likely to be relevant to immediate interaction, namely, someone looking at them.

The face is a source of spontaneous categorization for race processing as well. Resembling IAT work, people primed with concepts typically associated with certain racial groups (e.g., basketball) more readily identify faces belonging to the associated categories (i.e., Black males; Eberhardt et al. 2004). Altogether spontaneous categorizations anchor most interactions, though motives and goals do moderate their effects.

Ambiguity in Categories

Categorization has ambiguous effects. For example, ingroup-outgroup distinctions magnify the effects of categories. That is, people's views of ingroup members are more detailed than those of outgroup members; this yields the consequence of more extreme, polarized views of outgroup members (Linville and Jones 1980). For instance, Black prospective law school applicants garner more favorable views than comparable White applicants when armed with strong credentials, but harsher views when possessing weak credentials. Thus, the role of race is ambiguous; Blacks are not always more negative, but more extreme under some conditions.

Still, also ambiguous is that the general tendency to favor the ingroup does not necessitate outgroup derogation (Brewer 1999). Favoring the ingroup has the zero-sum consequence of disadvantaging people not "like us." But preferring one's own kind is a more ambiguous prejudice than unabashed rejection of the outgroup. Status perpetuates through ingroup favoritism.

Uncovering the social construction of categories has further muddied the ambiguity of social categories, once thought to be definitively biological. For instance, acknowledging the symbolic, cultural meanings of race and gender avoids

oversimplified, unindividuating perspectives; this allows better understanding of how inequalities are socially constructed and not predetermined by biology (Glenn 1999). Given the repeated absence of conclusive biological, genetic markers (e.g., Nisbett 2009), social determinants of race in particular mark its undeniable social inequalities (Smedley and Smedley 2005). Overall, with globalization, intermarriage, intersectional identities, and social change, social categories are becoming more volatile (dynamic), uncertain (incomplete), complex (indeterminate), and ambiguous (unclear) (Bodenhausen and Peery 2009). Perhaps categories are also diluting, ambiguating, subtyping, and contextualizing as a result.

Complexity of Categories

Though originally stereotypes seemed rigid and resistant to change, later work showed that categories can get complicated, yielding multiple *subtypes*. For instance, though as noted the default perception of older people typically combines warmth and incompetence, people recognize the kindly "grandmother," the distinguished "elder statesman," the lonely "senior citizen," the "John Wayne conservative," and the wise "sage" (Brewer et al. 1981; Schmidt and Boland 1986). Moreover, people distinguish the relatively healthy and active "young-old" and the "old-old," despite the common tendency to group "senior citizens" as one group (Neugarten 1974; North and Fiske 2013b). Similar subdistinctions for gender include the "athletic woman" and the "blue-collar working man" (Deaux et al. 1985; Eckes 2002).

How does subtyping fit into changing categories? One description of the psychology of stereotype change suggests three different, possible models: (1) a *bookkeeping* process, in which extant stereotype content modifies gradually over time, (2) a more rapid, *conversion* whereby stereotype changes suddenly in the presence of a dramatic instance, and (3) a *subtyping* mechanism that adds subcategories to the existing stereotype content to apply it to more instances (Weber and Crocker 1983).

Future Opportunities

Clearly much remains for social psychologists interested in hierarchy. Psychologists may need to regain their "sociological imagination," reincorporating the structural perspectives that at one point developed hand-in-hand with individual-level psychological inquiry (Oishi et al. 2009). On both sides, bridging the two sides has become something of a lost art, with each increasingly specializing with their own, both in theme (distal societal influences versus proximal individual behavior) and in primary methodology (quantitative versus mixed approaches). But it does not have to be that way.

Until now, however, intergroup biases have been by some indicators the social psychology field's top topic (Fiske 2002). Social psychologists have much to offer, serving as a citation hub, a discipline that translates more biological approaches (health outcomes, social neuroscience, social evolution) to more macro sociological approaches (Fiske and Molm 2010).

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Part IV
How Is Status Manifested in the Body?

Chapter 13
Hormones and Hierarchies

Erik L. Knight and Pranjal H. Mehta

Status hierarchies are a pervasive feature of human and animal societies, organizing individuals along a shared understanding of respect and influence. Group members at the top of a hierarchy are afforded several benefits, including greater access to valued resources (e.g., food, money, mating opportunities) and greater power over lower-ranking members. But hierarchies have broader benefits for the entire group as well, improving group efficiency, effectiveness, and productivity (Halevy et al. 2011; Ronay et al. 2012). These dynamics are evident in the status hierarchies of modern, democratic political systems. Hierarchical order within politics allows those with high status to determine the course of laws, presumably improving the effectiveness of the decision-making process. Meanwhile, earning the respect and votes of a majority of citizens brings with it specific benefits. High-status politicians surround themselves with a legion of staffers and interns who cater to their needs. Politicians also leverage their political sway to reap financial benefits for their constituents and for themselves. Compare this to a low-status position, like an intern who instead must do as he is told in order to gain access to his bosses' control of laws and finances, and is most likely underpaid, if paid at all.

But if you ask a politician why he wants an elected position, neither the perks of high status nor the hassles of low status will be mentioned. Instead, the politician will likely rely on an assertive, confident behavioral style to accentuate some verbal answer that emphasizes his many strengths and his opponent's weaknesses. In political settings, these dominant behaviors may be further evident in public forums like impassioned speeches or fiery head-to-head debates. These displays of social dominance and competitive behaviors represent one important route to attaining high status in both human and animal societies (Anderson and Kilduff 2009a; Cheng et al. 2013; Mazur and Booth 1998). Similar responses occur in many animal social groups where competitions for status often take the form of overtly aggressive behaviors when status is challenged (Mazur and Booth 1998). The nascent field of social endocrinology, which studies the intersection of behavioral endocrinology

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and social-personality psychology, provides insights into the role of dynamic, hormonal systems in regulating these behaviors in pursuit of not just political status, but of status in any hierarchy.

For over 150 years, hormones—chemical messengers secreted from endocrine glands that communicate with systems throughout the body including the central nervous system—have been studied in animals as effectors of physiological and behavioral change. The earliest experimental work demonstrated that some unknown chemical from reimplanted testes could prevent the loss of typical male morphology (e.g., combs and waddles) and behavior (e.g., crowing) in a castrated rooster (Berthold 1849; Soma 2006). Later work identified this chemical as the hormone testosterone and showed that it is responsible for these and other forms of virility, like the development of specialized anatomy (e.g., deer's antlers; Lincoln et al. 1972) and the propensity to behave aggressively during the mating season (Wingfield et al. 1990). From these early roots, the field has expanded to explore other hormones, increasingly complex behaviors, and most recently has begun examining hormones and social processes in humans (Mehta and Josephs 2011).

In this chapter, we review the neuroendocrine systems that influence and respond to the behaviors that govern status. We focus on hormones and status in human hierarchies, but we rely on animal work to inform our discussion. We selectively review separate lines of research on testosterone and cortisol before turning to recent evidence on the interaction between these two hormones in status hierarchies. Sections on estradiol and oxytocin follow, and we conclude by examining future directions for research on the interplay between hormones and hierarchies.

Testosterone

Testosterone (T), a steroid hormone derived from cholesterol, is primarily produced in the testes in males, the ovaries in females, and in the adrenal glands in both sexes. T belongs to a class of hormones called androgens, which are those hormones that are responsible for the development and maintenance of masculine characteristics (Wu and Shah 2011). Secretion of T results from the coordinated action of the hypothalamic-pituitary-gonadal (HPG) axis: Gonadotropin-releasing hormone (GnRH) from the hypothalamus stimulates the release of luteinizing hormone (LH) and follicle stimulating hormone (FSH) from the pituitary gland. LH and FSH then stimulate secretion of T from the gonads (Payne and Hales 2004). Higher levels of circulating testosterone are associated with increased dominant behaviors in several animal species. This relationship is strongest when social rank within the hierarchy is unstable. Sapolsky's (1991) research on wild baboons showed that during periods of social instability, due in part to an injured, alpha male within the baboon troop, T was positively related to aggressive and dominant behaviors. In times of stability, there was no relationship between T and these behaviors, a pattern seen in several other species as well (cichlid fish, Oliveira et al. 1996; lamb, Ruiz-de-la-Torre and Manteca 1999; birds, Wingfield et al. 1990). The animal literature thus suggests

that high-T levels motivate individuals to seek out higher status when social status is up for grabs.

The association between T and status pursuit also extends to humans. Social dominance tends to be associated with higher-basal T levels in both men and women (reviewed in Archer 2006; Mazur and Booth 1998; Carre et al. 2011; Eisenegger et al. 2011). T also influences affective and attentional processes related to status, increasing vigilance and emotional reactivity toward dominance cues, such as angry, threatening faces (Hermans et al. 2008; Terburg et al. 2012; van Honk et al. 1999; Wirth and Schultheiss 2007) and decreasing vigilance toward submissive cues such as fearful faces (van Honk et al. 2005). These effects of T on attention are thought to be unconscious, given that the effects of T are strongest when dominant and submissive faces are presented outside of conscious awareness (van Honk et al. 2005; Terburg et al. 2012; Wirth and Schultheiss 2007).

Basal Testosterone's Role in Status Seeking

The findings reviewed above are consistent with the hypothesis that T levels influence status-seeking motivation. To provide more direct tests of T's role in the desire for status, several studies were conducted in which social status was experimentally manipulated, primarily in dyadic competitive social interactions. In eight different studies, basal T was measured in saliva before a status manipulation, after which various affective, cognitive, physiological, and behavioral outcomes were measured (Jones and Josephs 2006; Josephs et al. 2003, 2006; Mehta et al. 2008; Newman et al. 2005). In all of these studies, the interaction between basal T and status predicted the outcomes under investigation. For example, high-T individuals who lost status performed poorly on complex cognitive tasks, paid more attention to status cues, and exhibited increases in negative affect (Josephs et al. 2006). High-T individuals who gained status showed the opposite pattern of response, performing well on complex cognitive tasks, paying less attention to status cues, and showing no signs of increased negative mood. Mehta et al. (2008) further showed that high-T individuals who lost status rose in cortisol, a neuroendocrine marker of psychological stress. Meanwhile, high-T individuals who gained status dropped in cortisol. Taken together, these results suggest that high-basal T levels are linked to a drive for high status. High-T individuals who achieve high-status experience psychological comfort (e.g., low negative affect) and adaptive functioning (e.g., strong cognitive performance). High-T individuals who fail to achieve high-status experience psychological distress (e.g., cortisol increases, high negative affect) and maladaptive functioning (e.g., poor cognitive performance).

Low-T individuals in these same studies reacted differently to changes in status. In some studies low-T individuals reacted to low and high status similar to individuals in control conditions in which status level was not experimentally manipulated (Newman et al. 2005) or was not threatened (Josephs et al. 2003). These results suggest that low-T individuals lack the strong drive for high status found in high-T

individuals. In other studies, low-T individuals found high-status positions aversive. When placed in high-status positions, low-T people were hypervigilant to status cues, showed elevated physiological arousal, and performed worse at cognitive tasks compared to low-T individuals placed in low-status positions (Josephs et al. 2006). These results suggest that when thrust into high-ranking positions, low-T individuals may experience arousal and maladaptive functioning out of a desire to return to a more comfortable low-status position. Thus, T may orient individuals toward or away from high status and influence psychological and behavioral responses within a hierarchy.

Women have approximately one-third the concentrations of T in saliva relative to men, but there were no sex differences in the predictive power of basal T on reactions to changes in status in these studies. Men and women high in T relative to other individuals of the same sex reacted negatively to a drop in status (Josephs et al. 2003, 2006; Mehta et al. 2008; Newman et al. 2005). Men and women low in T relative to other individuals of the same sex showed neutral (Josephs et al. 2003; Mehta et al. 2008; Newman et al. 2005) or negative reactions (Josephs et al. 2006) to a rise in status. These findings suggest that basal T is a biological marker of chronic status-seeking motivation in both men and women.

Basal T's role in behavior within status hierarchies is not limited to dyadic social interactions. Other work indicates that a group's specific composition of basal T and social rank may help (or undermine) group cohesion and effectiveness. In one study of 579 students enrolled in an introductory organizational behavior course, students provided saliva samples and were randomly assigned to small work groups. The groups worked on various projects over the course of a semester (Zyphur et al. 2009). Group members rated one another on status, and measures of overall group effectiveness were collected (group efficacy). There was no direct association between basal T and social status, but the (mis)match between T and status was associated with group functioning. Those groups in which high-T individuals had high status and low-T individuals had low status reported greater group efficacy than those groups in which low-T individuals had high status and high-T individuals had low status. These findings provide further evidence that high-T individuals are more comfortable in high-status positions than low-T individuals, which in turn impacts group functioning. When there is a match between basal T and status attainment (high-T individuals with high status, low-T individuals with low status), the group functions well. But when there is a mismatch between basal T and status attainment (low-T individuals with high status, high-T individuals with low status), the group functions poorly (c.f., Josephs et al. 2006) (see Ronay et al. 2012 for findings on prenatal testosterone exposure and group effectiveness).

Acute Changes in Testosterone and Status Seeking

The studies reported above examined basal T as a stable trait and demonstrated its association with status-seeking behaviors. However, not only does T influence

behavior, but behavior and the social environment influence T levels. Specifically, T concentrations fluctuate around basal levels in status-relevant social settings. According to the reciprocal model of T and status, a rise or drop in status should influence T levels, and these rapid T fluctuations should produce a reciprocal effect by influencing subsequent status-seeking behaviors (Mazur and Booth 1998). In particular, scholars have speculated that T increases may encourage further attempts at gaining status, while T decreases may lead individuals to flee the situation to avoid any further loss of status.

Empirical support for this reciprocal model comes from research in competitions, modeled in real-world sporting events and rigged laboratory settings. Several studies have shown that winners' T concentrations increase relative to losers for a few hours following a competition (reviewed in Archer 2006; Mazur and Booth 1998; Salvador and Costa 2009; van Anders and Watson 2006). Intriguingly, this win-lose effect can occur in vicarious experiences of winning or losing as well, such as in sports fans or in supporters of political candidates. In a study of soccer fans watching a match, fans of the winning team increased in T compared to fans of the losing team (Bernhardt et al. 1998). And in the 2008 Presidential Election, supporters of losing candidates (John McCain or Robert Barr) dropped in T relative to supporters of the winning candidate (Barack Obama) in the hours following the announcement of the election results (Stanton et al. 2009).

These effects of victory and defeat on T responses are not always found, suggesting a role for other psychosocial and physiological variables in modulating the post-competition T response. For example, implicit power motivation—an individual difference factor associated with an unconscious desire to obtain high-status positions—moderated the effects of victory and defeat on changes in T in one study (Schultheiss et al. 2005). High-power individuals rose in T after victory and dropped in T after defeat; low-power individuals showed the opposite pattern of T changes. Presumably, people high in power motive are chronically motivated to gain status. Thus, when their status drops, these individuals react strongly by dropping in T. When their status rises, they react strongly by rising in T. Other moderators of the win-lose effect on T changes include the cognitive and affective response to the competition (Salvador and Costa 2009), biological factors such as basal hormone profiles (Mehta and Josephs 2010), personality traits (trait anxiety, Maner et al. 2008), and environmental factors (home versus away game, Carré 2009).

Although this literature has uncovered several factors that predict T changes after changes in status, researchers had assumed that status-induced fluctuations in T influenced future status-seeking behaviors. Mehta and Josephs (2006) conducted the first empirical study in humans that examined the relationship between postcompetition T changes and subsequent social behavior. Status was experimentally manipulated with a rigged laboratory competition, and saliva samples were collected before and after the competition to measure changes in T (Mehta and Josephs 2006). After competing and after providing the second saliva sample, participants were given the option of competing against the same opponent in a second competition or completing an alternative, noncompetitive task (Mehta and Josephs 2006). Individuals who lost the competition and whose T concentration rose were

significantly more likely to choose to compete again than individuals who lost and whose T concentration dropped. Another study showed the same pattern of findings with measures of aggressive behavior (Carré et al. 2009; see also Carré et al. 2011). These findings are consistent with the reciprocal model and suggest that a rise in T after a drop in status motivates further attempts at gaining status, while a drop in T after a drop in status motivates individuals to avoid any further loss of status.

All together, the research on T in humans suggests that basal T taps into a person's chronic status-seeking motivation, analogous to a personality trait, whereas short-term changes in T tap into a person's state status-seeking motivation, analogous to mood (cf. Mehta et al. 2008).

Cortisol

Cortisol, a steroid hormone of the glucocorticoid family, is produced in the adrenal glands and released as the end product of the hypothalamic-pituitary-adrenal axis (HPA-axis). Physical and psychological stress stimulates a hormonal cascade, wherein the hypothalamus secretes corticotropin-releasing hormone (CRH), which stimulates adrenocorticotropic hormone (ACTH) to be released from the anterior pituitary, which finally stimulates cortisol release (see Fig. 13.1). The primary function of cortisol is to mobilize glucose to fuel the "fight or flight" response to stress and enhance cardiovascular functioning (Sapolsky 1999). Cortisol also acts as a signal to inhibit further HPA-axis activity, forming a negative feedback loop that helps attenuate the stress response. Thus, cortisol release is a useful and adaptive response to stress in the short term that physiologically prepares the body for the rigors of reacting to a stressful experience.

But overexposure to cortisol due to chronic stress disrupts the negative feedback loop, leading to cyclically increasing cortisol concentrations and a generally dysregulated physiological response to stress. Continual cortisol secretion reduces the quantity and efficacy of glucocorticoid receptors in the brain and along the HPA-axis, resulting in an overall attenuation of glucocorticoid receptor activity in response to cortisol (Sapolsky et al. 1985; Cohen et al. 2012). This reduction in glucocorticoid receptor activity leads to an inability to effectively suppress the endocrine stress response, resulting in sustained activation of the HPA-axis. In fact, when impairment of the negative feedback loop results in excess secretion, cortisol itself becomes a liability, with its deleterious effects including neural atrophy (Sapolsky 1996), poor immune functioning (Cohen et al. 2012), and cardiovascular disease (Sapolsky 2004).

Cortisol typically increases sharply each morning shortly after awakening— termed the cortisol awakening response (CAR)—followed by a decline throughout the day—referred to as the diurnal cortisol slope (Fries et al. 2009). Chronic stress dysregulates this cycle, attenuating the awakening response and flattening the diurnal cortisol slope (Dowd et al. 2009; Miller et al. 2007). In summary, cortisol concentration rises in response to stressors and, if the stress is chronic, leads to
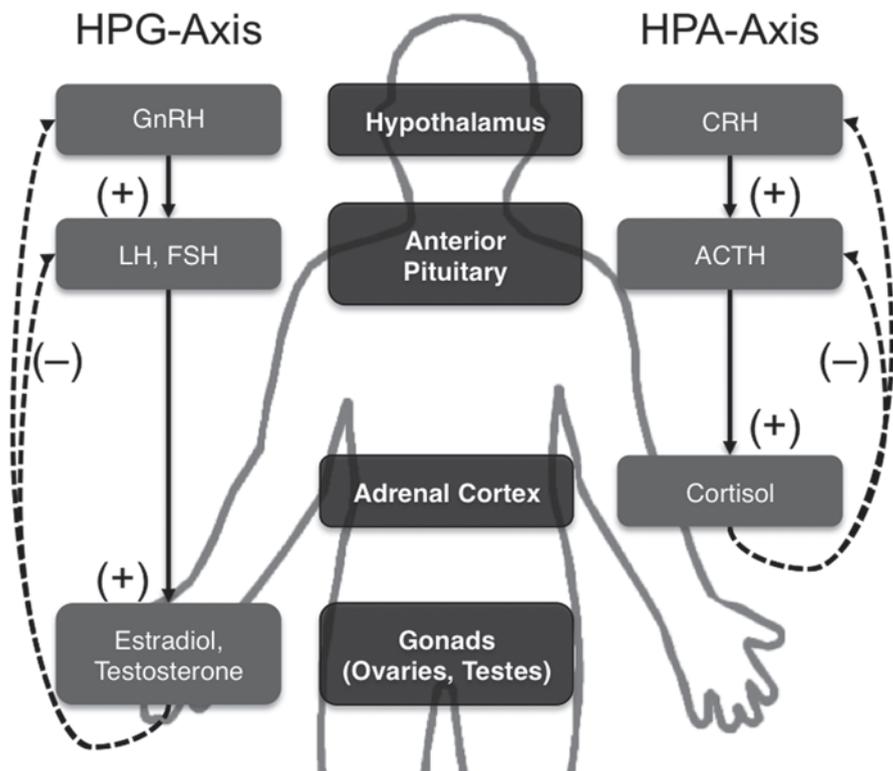
Fig. 13.1 Hypothalamic-pituitary-adrenal (*HPA*) and hypothalamic-pituitary-gonadal (*HPG*) axes and their cascading endocrine responses. *Solid lines* represent a stimulating effect; *dashed lines* represent inhibitory effects. Note that within the menstrual cycle, estradiol will stimulate production and release of LH once estradiol concentration reaches a certain threshold. Otherwise, estradiol will have a suppressive effect on the pituitary hormones. *GnRH* gonadotropin-releasing hormone, *LH* luteinizing hormone, *FSH* follicle-stimulating hormone, *CRH* corticotropin-releasing hormone, *ACTH* adrenocortiocotropic hormone

increasingly stronger cortisol responses to subsequent stressors as well as further exposure to cortisol through the dysregulation of the daily cycle of release. Cortisol is thus an integral part of the body's physiological reaction to stress exposure. Below we review the evidence linking cortisol to status processes in humans.

Correlational Evidence for a Status-Cortisol Link

Basal Cortisol and Status Socioeconomic status, a broad measure of individual or familial wealth and education within society or a community (Adler and Ostrove 1999), correlates negatively with basal cortisol concentrations in several human studies (Cohen et al. 2006a; Evans and English 2002; Evans and Kim 2007; Garcia

et al. 2008; Li et al. 2007; Lupien et al. 2000; Steptoe et al. 2003; Kapuku et al. 2002). This inverse relationship between status and basal cortisol has been found in other status-relevant domains as well. Leaders had lower-basal cortisol compared to nonleaders in a unique sample of military and business personnel (Sherman et al. 2012). The higher cortisol levels seen in lower-status individuals is typically attributed to cortisol dysregulation that results from exposure to increased quantity or severity of stressors inherent to low ranking within a status hierarchy (Sapolsky 2005). Alternatively, if low-status individuals are more frequently stressed, increased cortisol may simply represent more recent contact with an acute stressor (Gersten 2008).

While these results illustrate that lower status is linked to high-basal cortisol, other studies examining basal cortisol concentrations and status found no relationship (Goodman et al. 2005; Gersten 2008; Gadinger et al. 2011). But it may be that low-hierarchical rank is linked to the daily pattern of cortisol secretion, not just basal cortisol concentrations.

Diurnal Cortisol Slope and Status Status does indeed relate to differential patterns of daily cortisol secretion. As described above, healthy diurnal cortisol secretion consists of the sharp, CAR-related increase in cortisol concentration followed by the day-long decline measured by the diurnal cortisol slope (Fries et al. 2009). In several studies, the diurnal cortisol slope appears flattened in lower SES individuals compared to higher-SES individuals (Agbedia et al. 2011; Kumari et al. 2010; Li et al. 2007; Ranjit et al. 2005; Do et al. 2011; Hajat et al. 2010). Following the cortisol awakening response, low SES individuals' cortisol concentrations decline at a slower rate throughout the day, which may result in greater exposure to cortisol. Chronic stress is thought to lead to this abnormal diurnal cortisol pattern, but an exact psychosocial mechanism linking status, stress, and cortisol is still under investigation (discussed below).

Mere dysregulation of the HPA-axis is not the end of the potentially detrimental consequences of low status. Abnormal diurnal cortisol patterns have been studied as contributing to several pathologies that occur at higher rates among low-SES individuals, including high blood pressure (Phillips et al. 2000), strokes, cardiovascular disease, and Type 2 diabetes (Rosmond and Björntorp 2000a). Flatter diurnal cortisol slopes are also associated with increased all-cause mortality, especially due to cardiovascular disease (Kumari et al. 2011), and with earlier mortality due to breast cancer (Sephton et al. 2000).

Cortisol Reactivity and Status The previous work implicates low status in high-basal cortisol and blunted cortisol rhythms throughout the day. Some evidence also links low status to cortisol increases in response to acute physical and psychosocial stress. Lower-SES individuals show a greater rise in cortisol in response to laboratory psychosocial stressors than high-SES individuals (Fiocco et al. 2007; Kristenson et al. 1998; Adler et al. 2000). In another study low-SES individuals showed cortisol hyperactivity compared to high-SES individuals following a pharmacological challenge of HPA-axis functioning (Rosmond and Björntorp 2000b). In response to a dexamethasone suppression test—a test of the ability of the HPA-axis to suppress

cortisol secretion in response to dexamethasone, a cortisol agonist—low-SES indi-viduals did not reduce cortisol concentrations as effectively as high-SES individu-als (Rosmond and Björntorp 2000b). Taken together, these studies suggest that a given stressor will result in stronger activation of the HPA-axis and a slower return to baseline for a low-status individual. Repeated over the course of a day or life, this augmented reaction and prolonged recovery will expose the individual to more cortisol and to the concomitant negative effects of cortisol.

Mediators of the Status-Cortisol Link

The body of research reviewed above suggests that status is negatively related to cortisol concentrations in humans as measured in basal concentration, diurnal pat-terns, and acute fluctuations of cortisol concentration. Several variables have been proposed as putative mechanisms of this relationship, of which we will review four: Health behaviors, sense of control, hostility, and social support.

Health Behaviors Health behaviors have been investigated as an explanation for the relationship between status and cortisol, specifically within the context of SES. Several health behaviors were found to explain the relationship between measures of cortisol dysregulation and SES, including increased alcohol and tobacco use (Cohen et al. 2006a, b). Tobacco directly stimulates cortisol secretion in the short-term and increases basal cortisol concentrations in current smokers compared to ex- and non-smokers (Badrick et al. 2007). Alcohol use also raises basal cortisol concentrations (Thayer et al. 2006; Bernardy et al. 1996).

The psychological relationship between alcohol/tobacco use and status is less well understood. These behaviors exist at higher rates in low-SES environments, but it is unclear whether they are a response to or product of the environment, or some combination of both (Krueger and Chang 2008). Increased alcohol and tobacco use may reflect stress-induced derailment of impulse control or self-regu-latory processes (Muraven and Baumeister 2000; Hull and Slone 2004). Or perhaps alcohol and tobacco consumption reflect a coping mechanism for dealing with low-SES stress, as both products are believed (by the users) to relieve tension and im-prove negative affect (Pampel et al. 2010; Hull and Slone 2004). Alternatively, the increased usage could result from environmental cultural norms, lower-education levels, or simply having less reason to invest in the future (Cutler and Lleras-Muney 2008; Pampel et al. 2010).

Sense of Control In stressful situations, lacking control over the stressor is known to produce substantial increases in cortisol compared to stressors that are directly controlled or predictable by an individual (Dickerson and Kemeny 2004). Being in a position at the top of a hierarchy lends itself to being or feeling in control, even over variables one could not possibly control such as the outcome of a roll of a die (Fast et al. 2009). So when a stressor is experienced by a high-status individual, she may be more likely to feel in control or actually be in control of that stressor, which

in turn attenuates the cortisol response. Consistent with this idea, self-reported sense of control accounts for the attenuating effect of status on cortisol when measured broadly as control over life circumstances and outcomes (Cohen et al. 2006b) and as interpersonal control over subordinates (Sherman et al. 2012). Indeed, instilling a sense of control has been suggested as an intervention for combating the negative effects of low SES. The "shift and persist" intervention proposes to improve stress coping of low-SES individuals by shifting attention toward what can be controlled within a stressful situation (Chen and Miller 2012). Redirecting attention to maximize one's sense of control may reduce the stress response, minimizing exposure to cortisol and the negative effects associated with increased cortisol concentration. The "persist" half of the proposed intervention relates to maintaining optimism and resiliency in the face of life's stressors. These traits have been found to predict lower-basal cortisol in individuals, even at lower SES (Lindfors and Lundberg 2002; Ryff et al. 2004).

Hostility Hostility is defined as an individual's proneness to anger and aggressive behavior based on a distrustful view of others (Kubzansky et al. 1999). Hostility is negatively related to SES, likely as a response to the difficult circumstances inherent to being at the bottom of a hierarchy (Elovainio et al. 2001). Hostile individuals tend to respond antisocially to stressors, which in turn begets further interpersonal hostility (Smith 1994; Gallo et al. 2006). Hostility may underlie the cyclic and detrimental nature of stress and low status: Continual stress may lead to the development of a hostile nature that in turn invites additional provocation from others, becoming an added stressor in itself. High-trait hostility also affects HPA-axis function, associating with increased daytime cortisol secretion and flattened cortisol slope (Pope and Smith 1991; Ranjit et al. 2009). Yet, while hostility has *not* been found to explain the relationship between SES and cortisol specifically, it does account for the relationship between SES and a summative measure of stress physiology, referred to as allostatic load, which incorporates cortisol as one of several physiological markers of stress (Hawkley et al. 2011; Kubzansky et al. 1999). Hostility explains the physiological repercussions of low-status stress, but more research is necessary to clarify if hostility relates directly to cortisol functioning or only to broader stress physiology.

Social Support The social networks of nonhuman primates provide several routes for high-status members of the hierarchy to cope with encountered stressors, for example, by being groomed by or aggressing toward subordinates (Sapolsky 2005). Likewise, humans generally benefit from social support, which has been shown to relate to lower-basal cortisol concentrations (Pinquart and Sörensen 2000; Uchino 2006; Taylor et al. 2000) and to reduce the cortisol response to acute laboratory stressors (Heinrichs et al. 2003). Unreliable social networks and perceptions of social isolation meanwhile are stressors in themselves (Uchino 2006; Hawkley et al. 2012).

Since one's status is dependent on the opinions of others, having high status may provide more social capital to buffer one's stress response, while low status may not provide as rich of social networks on which to rely. Accordingly, low SES

correlates with weaker social connections and less diverse social networks, which then accounts for increased cortisol concentration (Cohen et al. 2006a, b). The reasons for this negative relationship between SES and social support may stem from distrusting one's neighbors in low-income neighborhoods (Subramanian et al. 2003; Brehm and Rahn 1997) or from an inability to provide or seek support due to the chronic stressors inherent to low SES (Cattell 2001). Future work that elucidates the exact aspect of social support that mediates this relationship could provide targets to ameliorate some of the negative consequences of low SES.

Experimental Evidence for Status-Cortisol Link

The reviewed work indicates that status correlates negatively with cortisol in naturalistic studies, but the correlational nature of the evidence prohibits making causal statements of the direction of the effect for cortisol and status in human hierarchies. Although few experiments have focused on cortisol and status, recent work has begun to investigate causal explanations of the relationship between status and cortisol.

Status Causally Alters Cortisol Low status causally dysregulates HPA-axis activity in experimentally manipulated status hierarchies of nonhuman primates and other social animals, with results suggesting lower status leads to increased cortisol concentrations. In female rhesus macaques, subordination disrupts normal HPA-axis functioning, decreasing the cortisol awakening response and prolonging cortisol release following a stressor (Michopoulos et al. 2012). The relentless stress of low status causes diurnal and acute cortisol dysregulation in the lower-ranking macaques, an effect that has been found in experiments with several other species of social animals (cynomolgus monkeys: Jayo et al. 1993; mice: Avitsur et al. 2001; domestic pigs: Mendl et al. 1992; zebrafish: Filby et al. 2010).

While status appears to alter cortisol activity in the species of various social animals, this experimental hypothesis has not been extensively tested in humans. The few studies that have experimentally tested the effects of status in humans show that status inversely affects cortisol concentrations, similar to the results seen in longitudinal and cross-sectional studies. Cortisol increased following social stressors when low status was randomly assigned in an experimental hierarchy, while cortisol reactivity was attenuated when high status was assigned (Carney et al. under review). A separate study found that adopting postures typically associated with nonverbal displays of high and low rank in a hierarchy affected cortisol concentrations. The so-called "power positions"—which include an open, expansive posture for high rank and a diminutive posture for low rank—decreased cortisol for high-rank body postures and increased cortisol for low-rank postures (Carney et al. 2010). This evidence indicates that experimental manipulations of social rank in a hierarchy affect cortisol concentration and cortisol reactivity to stressors in humans. In addition to long-term effects on the HPA-axis, social status seems to have immediate consequences for cortisol functioning.

Cortisol Causally Alters Status While this experimental research indicates that status causally influences cortisol concentrations, some evidence suggests the reciprocal relationship may be true as well. Animal studies have shown that glucocorticoids affect the formation of hierarchies as part of dominance contests. Administering corticosterone (the rodent analog to cortisol) to subordinate rats following defeat in a social interaction improves the memory for and maintenance of the hierarchy (Timmer and Sandi 2010). In a study on rainbow trout, cortisol implanted under the animals' skin affected the results of competitive interactions with similar-sized fish and smaller conspecifics (DiBattista et al. 2005). Compared to a control condition, cortisol significantly decreased the likelihood of the treated trout to become the dominant fish in both the similar- and smaller-sized pairing. This limited evidence from animal research suggests that glucocorticoids may affect both the establishment of and memory for a status hierarchy through dominance contests. These results have not been tested in humans *per se* (who are unable to hold their breath long enough to replicate these results), but cortisol may affect psychological variables relevant to hierarchical behavior. For example, cortisol disrupts social approach and avoidance behaviors (Roelofs et al. 2005; van Peer et al. 2007), which are theoretically important to earn and maintain status (Anderson and Berdahl 2002). An exact role for cortisol in causally determining status within human hierarchies awaits future experimental research.

Cortisol Responses to Competition

Research on SES and status often studies status within static hierarchies, but the negative relationship between status and cortisol is found when the stepwise progress of obtaining high or low status in competitive settings is examined as well. As reviewed in the T section above, a dynamic model of status is found in naturalistic dominance contests like sporting events, laboratory competition, and political elections. Correlational studies of competitions show that gaining or maintaining status by winning a competition or supporting the winning side of a competition is associated with a drop in cortisol, while losing a competition or supporting the losing side is associated with a rise in cortisol (Stanton et al. 2010; Jimenez et al. 2012; Bateup et al. 2002).

Yet several studies have found a null relationship between competition outcome and cortisol (e.g., Oliveira et al. 2009), or even increased cortisol after winning (Suay et al. 1999). The inconsistent nature of this association suggests that factors other than competition outcome play a role in determining the relationship between dynamic changes in status in competition and cortisol. Similar to the research reviewed earlier on testosterone (Schultheiss et al. 2005), implicit power motive—a measure of a person's unconscious motivation to dominate others—is linked to cortisol responses to victory and defeat (Wirth et al. 2006). Individuals high in implicit power motive experienced rises in cortisol after losing a dominance contest and drops in cortisol after winning, whereas those low in implicit power

motive showed the opposite pattern of cortisol changes (Wirth et al. 2006). These findings suggest that being relegated to low-status positions (losing a competition) may cause cortisol to increase only for those individuals motivated to achieve high status (individuals high in power motive). For those individuals who do not desire high-status positions (individuals low in power motive), achieving high status may actually be stressful resulting in cortisol increases (Wirth et al. 2006). The role of individual differences and social factors in moderating the relationship between status and cortisol is an important topic for future research, a point we expand upon toward the end of the chapter.

The Dual-Hormone Hypothesis: Testosterone × Cortisol Interactions and Status

Social endocrinology research—and this chapter, so far—typically examines independent effects of hormones on behavior. While this approach has been fruitful for identifying some hormone-behavior relationships relevant to status, it may also contribute to inconsistent findings. For example, many studies find null associations between testosterone and status-related behaviors such as aggression (Archer 1998), and other studies find null associations between cortisol and status (Gadinger et al. 2011). These inconsistencies may arise because testosterone and cortisol may work interactively—not independently—to affect social behaviors linked to status. According to the *dual-hormone hypothesis* (Mehta and Josephs 2010), testosterone and cortisol should jointly regulate behavior such that testosterone should be positively related to status-seeking behaviors—and in turn, higher status—only when cortisol concentrations are low (Mehta and Josephs 2010). When cortisol concentrations are high, testosterone's effect on status-seeking behaviors should be blocked. A series of recent studies provide strong empirical support for the dual-hormone hypothesis (Edwards and Casto 2013; Mehta and Josephs 2010; Popma et al. 2007). For example, one study collected afternoon saliva samples to measure basal testosterone and cortisol and then videotaped participants in a position of leadership (Study 1, Mehta and Josephs 2010). Seven judges rated the leaders on nineteen social behaviors linked to dominance (e.g., engaged, gave clear instructions, directive, leader-like, confident, nervous, uncomfortable). All nineteen behaviors were aggregated to create an overall dominance factor (items such as nervous and uncomfortable were reverse scored prior to aggregation). As shown in Fig. 13.2a, dual-hormone profiles of T and C interactively predicted dominant leadership behaviors. Basal T was positively related to dominance only among leaders low in basal C (Fig. 13.2a, solid line), but basal T was unrelated to dominance among leaders high in basal C (Fig. 13.2a, striped line).

Social dominance is a key behavioral route to attaining high status across species (Anderson and Kilduff 2009b; Mazur and Booth 1998). Thus, the dual-hormone interaction may not only be related to dominant behaviors, but also to who attains high status. Two recent studies linked the testosterone-cortisol interaction

Fig. 13.2 Evidence for the dual-hormone hypothesis in three studies. **a** Adapted from Study 1, Mehta and Josephs (2010); **b** Adapted from Edwards and Casto (2013). **c** Adapted from Mehta et al. (2013)
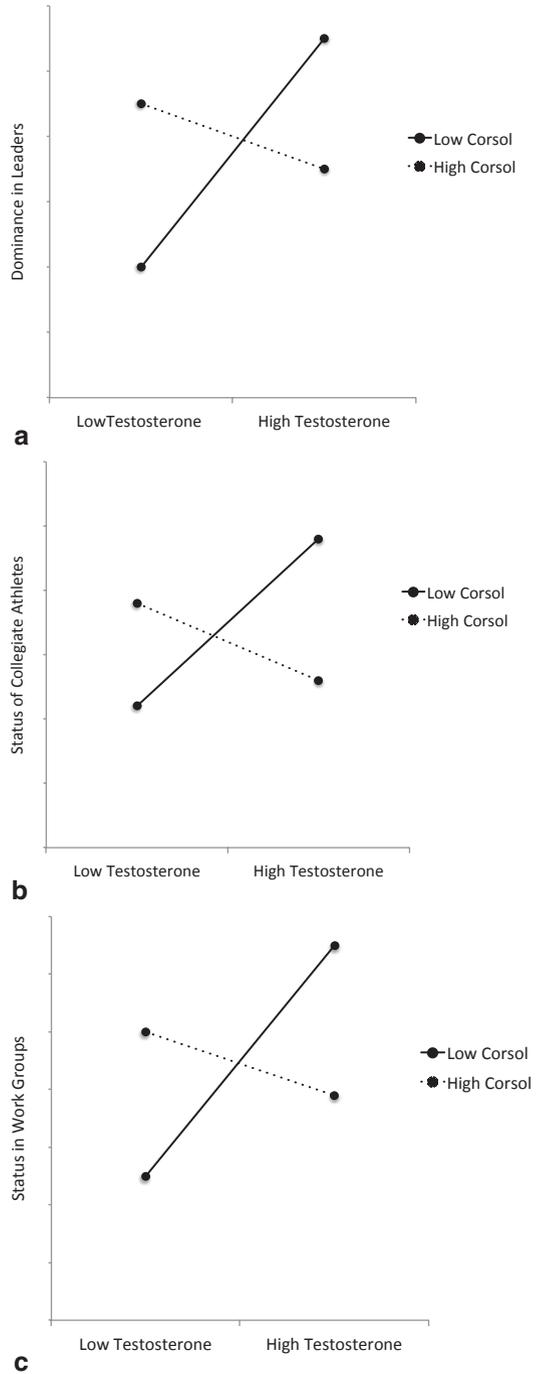
to social status. Edwards and Casto (2013) measured basal hormone levels in approximately 90 female collegiate female athletes (on soccer, softball, volleyball, and tennis teams) and collected measures of status within their teams. As shown in Fig. 13.2b, there was a dual-hormone interaction that closely matched Mehta and Josephs (2010). Higher testosterone was positively related to social status only among athletes low in basal cortisol (Fig. 13.2b, solid line), but basal testosterone and status were unrelated among athletes high in basal cortisol (Fig. 13.2b, striped line). A third study measured dual-hormone profiles, dominance, and status in MBA students at an elite business school. Students provided afternoon saliva samples and were randomly assigned to small work groups several weeks later (Mehta et al. 2013). The groups were videotaped performing a group decision-making task. At the end of the task, all participants ranked their fellow group members on leadership. These leadership rankings were aggregated to create an overall measure of status. Research assistants watched the videos and coded for dominant behaviors. Consistent with Mehta and Josephs (2010) and Edwards and Casto (2013), the testosterone-cortisol interaction predicted leadership rank (Fig. 13.2c) and dominant behaviors. Moreover, dominance partially mediated the association between the dual-hormone interaction and leadership rank. Overall, these studies demonstrate that the testosterone-cortisol interaction predicts the attainment of status through dominant behaviors. Higher testosterone is positively related to social dominance and in turn higher status only among individuals with low cortisol, but testosterone is unrelated to social dominance or status among individuals with high cortisol.

The underlying physiological mechanisms for dual-hormone effects on behavior remain unknown. Mehta and Josephs (2010) speculate that these dual-hormone interactions may occur through an inhibitory effect of cortisol on the pathway between testosterone and behavior. When cortisol is low, the pathway between testosterone and behavior functions efficiently, and higher testosterone should have a strong effect on behaviors such as dominance. When cortisol is high, the pathway between testosterone and behavior may be blocked (e.g., by down-regulating androgen receptors, cf. Mehta and Josephs 2010). Testosterone and cortisol may also interact on a psychological level given testosterone's association with status-seeking motivation and cortisol's association with social approach-inhibition. A combination of high status-seeking motivation (high testosterone) and social approach (low cortisol) may lead to social dominance and higher status, whereas a combination of high status-seeking motivation (high testosterone) and social inhibition (high cortisol) may cause submissive behaviors and lower status. These mechanisms fit within a broader evolutionary approach to understanding the roles of the stress (HPA) and reproductive (HPG) axes in modulating complex social behavior (Carré and Mehta 2011). High environmental stress (high cortisol) may inhibit the effect of testosterone on reproductively relevant behaviors such as competitive behavior and dominance, because such behaviors are metabolically costly and potentially dangerous. Only when environmental stress is low (low cortisol) might behaviors relevant to the pursuit of status be expressed. Nevertheless, these proposed mechanisms are highly speculative and lack direct empirical support. Delineating the precise pathways that give rise to testosterone-cortisol interactions awaits further research.

Estradiol

Estradiol is the most prevalent and potent molecule of the class of steroid hormones known as estrogens, which are typically thought of as the female sex hormones (McCarthy 2008; Stanton and Edelstein 2009). The set of biochemical reactions necessary to produce estradiol is complex: Estradiol starts as a molecule of cholesterol, the precursor to all steroid hormones, which is then converted to a glucocorticoid. An androgen molecule is produced next before it is finally converted to estradiol. This process occurs primarily in the ovarian granulosa cells of human and nonhuman females, as well as in the adrenal cortices in females and males (McCarthy 2008). Stimulation of estradiol secretion, like testosterone, is the end product of a cascade of hormones from the HPG-axis and mainly relates to female reproductive processes. As part of the menstrual cycle, the pulsatile release of gonadotropin-releasing hormone (GnRH) from the hypothalamus and follicle-stimulating hormone (FSH) from the pituitary stimulates a surge of estradiol. When this rapid increase on estradiol reaches a certain threshold, estradiol increases luteinizing hormone (LH) secretion from the pituitary, which in turn induces ovulation (Plant 2012). Sustained increases of estradiol during puberty are responsible for the development of female secondary sex characteristics and for skeletal growth in males and females (Rogol et al. 2002). Placental tissue also secretes estradiol, which contributes to maintaining pregnancies (Albrecht et al. 2000).

While testosterone relates to concern for status in men and women, the role of T in female status-relevant behavior is tenuous (Mazur and Booth 1998). But this may be due to the important role estradiol, and not testosterone, plays in fertility and reproductive behavior in women such that estradiol underlies female status-seeking and dominant behavior (Stanton and Schultheiss 2009; Schultheiss 2007). An evolutionary perspective suggests that during the fertile period of the menstrual cycle, gaining a high-status position might improve fitness since high status would garner access to benefits like the best mates, most food, and social support (c.f. Stanton and Edelstein 2009). Thus, because ovulation is induced by a surge of estradiol, this hormone may promote competitive or dominant behaviors in females in response to the advantages high status holds for fertile females.

In line with this theory, early research on female chimpanzees has shown that administering estradiol enhances status by increasing dominant behavior within a small, female hierarchy (Birch and Clark 1946). In humans, higher-basal estradiol concentrations relate to higher measures of implicit dominance motives, an indication of a preference for power and higher ranking in hierarchies (Stanton and Schultheiss 2007; Stanton and Edelstein 2009). In fact, as further evidence of the evolutionary link between estradiol and status, the relationship between estradiol and implicit dominance is stronger in single women than women in romantic relationships (Schultheiss et al. 2003; Stanton and Schultheiss 2007; Stanton and Edelstein 2009). Lacking a sexual partner, single women theoretically have a greater incentive to compete for status in response to the endocrine signal of ovulation and consequently show a stronger correlational relationship between estradiol and implicit dominance.

Changes in estradiol concentration are also associated with dominance and status in laboratory studies, much like men's testosterone fluctuations in competition. In women who scored high on implicit dominance, winning a competition was associated with an influx of estradiol while losing resulted in diminished estradiol concentration (Stanton and Schultheiss 2007; Stanton and Edelstein 2009). Women low in implicit dominance did not show this pattern of estradiol response. Estradiol thus relates to an implicit drive for dominance and status in females and responds to changes in status for individuals with high implicit dominance.

Some evidence suggests that the effects of estradiol on status are only found in interfemale competition. Theoretically, female primates in the fertile phase of their menstrual cycle are only in competition with other females for status and mates; males are competed over, not usually competitors in this regard. Estradiol then may only augment female dominance or status in same-sex hierarchies. The literature cited above all relied on female-female hierarchies and competitions but did not test for effects of competitor gender. One recent study supports the concept that estradiol specifically alters female-female competition by demonstrating that women with high-estradiol levels are more competitive in negotiations with other women, but not men (Severance 2011). Future work should continue to explore the role of estradiol in competition while examining social moderators like competitor gender.

Oxytocin

Oxytocin is a neuropeptide hormone produced in the hypothalamus and secreted from the posterior pituitary that has recently received significant attention as a neuroendocrine modulator of social behavior and social cognition (Bartz et al. 2011). Early work with the hormone showed its importance in peripheral physiology, especially in regards to maternal processes and parturition. For example, oxytocin produces uterine and cervical contractions, stimulates the milk let-down reflex in the mammary glands, and is used clinically to induce labor (Salonia et al. 2005; Bethlehem et al. 2013). In animal studies, oxytocin additionally induces maternal behaviors like maternal care in rodents and maternal bonding in sheep which, when coordinated with the oxytocin-induced maternal physiology, aid in the survival of offspring (Ross and Young 2009). Human oxytocin similarly relates to parental behaviors, with plasma and saliva concentrations predictive of postpartum, parent-child bonding, attachment, and infant monitoring (Feldman et al. 2007, 2010, 2011; Galbally et al. 2011). Oxytocin also positively relates to levels of bonding and interpersonal attraction in romantic relationships (Grewen et al. 2005; Tops et al. 2007), though some work indicates that oxytocin may actually signal relationship distress and a concomitant desire for more social contact (Turner et al. 1999; Taylor et al. 2006).

While oxytocin alters peripheral physiology and seems to relate to parental and interpersonal bonding in humans, associating peripheral oxytocin concentration to
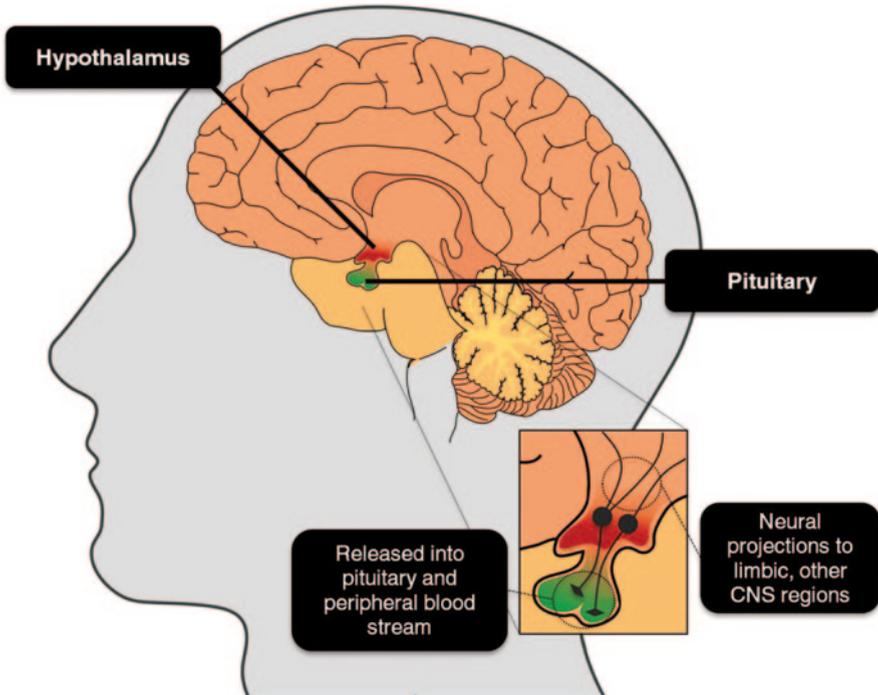
Fig. 13.3 Oxytocin is produced in the hypothalamus. Neural projections release oxytocin to limbic regions and other areas of the brain. Oxytocin is also released into the pituitary, where it is then secreted into the peripheral blood stream and carried to the rest of the body (Bethlehem et al. 2013)

social behavior remains controversial. The oxytocin molecule does not readily pass through the blood-brain barrier, the restrictive capillary anatomy that prevents certain molecules from entering the extracellular space of the central nervous system (Churchland and Winkeilman 2012). Unlike other hormones reviewed in this chapter, oxytocin secreted from the pituitary does not diffuse into the central nervous system, and thus peripheral basal concentration (i.e., measured in saliva or blood) does not correlate with cerebral spinal fluid concentrations (Kagerbauer et al. 2013). Instead, oxytocin is released into the central nervous system from neurons that project from the hypothalamus to limbic and other neural regions at concentrations that are distinct from peripheral levels (Bethlehem et al. 2013; Ross and Young 2009; Bartz et al. 2011; Fig. 13.3).

Oxytocin and Intergroup Status

Research on the prosocial effects of oxytocin in humans has accelerated in the past decade due to the development of an inhalable form of the hormone (Bartz et al. 2011). Intranasal administration of oxytocin deposits the hormone directly in the

cerebrospinal fluid where it can alter central neural physiology (Born et al. 2002). Initial work pointed to oxytocin directly increasing prosocial behaviors, earning oxytocin the monikers "love drug" and "cuddle chemical" (de Dreu 2012; Bartz et al. 2011). Broadly, oxytocin increases trust, generosity, and cooperation in economic decision-making games (Kosfeld et al. 2005; Zak et al. 2007) and increases interpersonal perceptions of trustworthiness and attractiveness (Zak et al. 2005; Theodoridou et al. 2009). Exogenous oxytocin also affects social cognition, improving memory for positively valenced faces (Guastella et al. 2008; Rimmele et al. 2009; Marsh et al. 2010) and improving empathic accuracy when the task is difficult (Bartz et al. 2011).

Yet, when examined in a social context, oxytocin appears to only promote prosocial behaviors directed toward in-group members (de Dreu 2012). So rather than affecting an individual's status like testosterone or estradiol, oxytocin affects behaviors related to improving the status of one's in-group. For example, oxytocin increased the likelihood for men to self-sacrifice economically for the benefit of an experimentally assigned in-group in a competition (de Dreu et al. 2010), especially when an in-group member is perceived to be threatened or vulnerable (de Dreu et al. 2012b). The men given oxytocin also reported a higher level of trust that their in-group members would reciprocate the self-sacrificial behavior, but did not exhibit an increase in distrust in or derogatory behavior toward the out-group.

The costly, prosocial behaviors found in these studies may signal an individual's unselfishness, generosity, and resource wealth to the other members of the group, who may then confer greater status to the altruistic individual (Hardy and Van Vugt 2006; Willer 2009). For example, donators to a public fund were rated as having higher status compared to nondonators and, in a second experiment, individuals who donated to in-groups but not competing out-groups were granted higher status than individuals who donated equally to in-groups and out-groups (Halevy et al. 2012). So while oxytocin-altered, altruistic behaviors directed toward in-group members (e.g., De Dreu et al. 2010) may result in individual status gains, the direct relationship between oxytocin and individual status has not yet been experimentally tested.

Exogenous oxytocin also affects unconscious cognitive processes that alter moral decisions and promote positive associations with the in-group. Oxytocin decreased the likelihood to sacrifice a member of a cultural in-group to save an unnamed group of individuals from impending doom (e.g., a runaway trolley in the moral choice dilemma problems; de Dreu et al. 2011). After administering oxytocin, men also responded more quickly to stimuli that paired in-group members' names with positively valenced words on the Implicit Association Test (IAT; Greenwald et al. 2009) and more slowly to out-group members' names as an implicit sign of preference for in-group members and disdain for out-group members, respectively (de Dreu et al. 2011). All together, these exogenous administration studies demonstrate oxytocin's influence on behaviors and psychology that benefit the in-group in competitive and noncompetitive settings, which result in promoting an in-group's status over an out-group.

Oxytocin also improves group dynamics, specifically altering behavior related to the process of forming a group and to cohesiveness within a group. When picking

teams, for example, dominant-looking individuals may prove more useful on one's own team rather than on an opposing team. Accordingly, oxytocin increases the preference for alliances with men with threatening, dominant facial features as opposed to less threatening, trustful features in an intergroup competition (De Dreu et al. 2012a). And once a team is formed, cohesion among a group's members is an important predictor of the performance of the group (Evans and Dion 1991). Oxytocin improves this aspect of in-group functioning as well, biasing subjective judgments towards agreement with the in-group and disagreement with the out-group (Stallen et al. 2012). When in-group and out-group members' ratings of the attractiveness of inanimate objects were at odds, males given oxytocin more often conformed to in-group ratings, an effect not seen in participants given placebo.

Interestingly, the effects of oxytocin on group-level status do not depend on the extent of the differences between in-group and out-group or on the inherent importance of the in-group to an individual. Instead, oxytocin stimulates these prosocial, in-group behaviors across a variety of in- and out-groups. De Dreu et al. (2011) showed that oxytocin produced prosocial effects directed towards the in-group when the out-group was defined in terms of two different cultural out-groups (i.e., names of German or undefined Arabic descent for Dutch participants). Oxytocin even bolstered in-group status in arbitrarily defined, experimental groups that do not contain implicit cultural importance (Stallen et al. 2012; de Dreu et al. 2010, 2012a, b). In light of these findings, oxytocin seems to amplify in-group bias in minimal groups (Tajfel 1982), meaning that any grouping—experimentally or culturally defined—is enough for oxytocin to affect the promotion of the in-group's status over the out-group.

In sum, elevated levels of oxytocin seem to promote group-level status by increasing altruistic, protective behaviors toward an in-group and positive cognitive associations and decisions with in-group members. One caveat from this literature is the dependence on male participants in these intranasal oxytocin administration experiments. Safety concerns for women (e.g., the potential to induce labor) and the degree to which oxytocin concentration fluctuates during the menstrual cycle (Salonia et al. 2005) make males a convenient sample to study. Yet a recent study suggests exogenous oxytocin differentially affects males and females. Intranasal oxytocin improves the ability to label ambiguous social interactions but this effect was only true for women viewing kinship interactions and for men viewing competitive interactions (Fischer-Softy et al. 2013). Future research must determine if similar effects on group-level status emerge in women given oxytocin, or if these effects are only found in males.

Effects of Status on Oxytocin

Little work has focused on the effects of status on endogenous oxytocin concentrations due to the problems of inferring central effects from peripheral oxytocin and due to the safety concerns of measuring oxytocin in cerebrospinal fluid. But it is

possible that oxytocin is generally increased in well-regarded, high-status individuals as they may experience more prosocial interactions and positive attention from lower-ranking members due to the esteem associated with high-status positions. Consistent with this idea, high status in experimentally determined, female rhesus macaque hierarchies boosts oxytocin concentration compared to low-status positions (Michopoulos et al. 2011). In this case, grooming and submissive behaviors directed toward the high-status members increased as a result of their position in the hierarchy, which in turn augmented oxytocin concentration for the high but not low-status members. Although work in humans has so far focused on the effects of oxytocin on group status, one's individual status may affect oxytocin concentrations, especially within stable, decorous hierarchies.

Future Directions

Moving forward, research on the social endocrinology of status will benefit from considering the effects of social and biological moderators, neural mechanisms, health implications, other hormones, and greater attention to the diverse ways in which humans attain status. Considering these factors will produce a more comprehensive model of the influence of hormones within hierarchies.

Social and Biological Moderators

More work on social moderators within hierarchies will expand our understanding of the biosocial mechanisms of status. For example, most work on humans has focused on the negative association between status and cortisol within stable status hierarchies where there is no potential to gain or lose status. But in unstable hierarchies, high-status individuals may fear losing their status (Jordan et al. 2011), undermining their sense of control and increasing their psychological stress. Low-status individuals may hope for a better position in the hierarchy, and a "nothing-to-lose" perspective may result in lower stress. Hence, cortisol and stress may be higher in high status compared to low-status individuals in unstable hierarchies. Evidence supports this possibility in animals (Sapolsky 2005), but the effects of hierarchical instability on endocrine function and status in humans remain unclear.

Genes that affect hormone receptor and neurotransmitter function also present interesting avenues for future research on hormones and hierarchies. Testosterone influences social behaviors by binding to androgen receptors, implying that testosterone should have a stronger effect on status-relevant behaviors in individuals with heightened androgen receptor function. One study linked variability in the androgen receptor gene to status-seeking behaviors in men (i.e., self-reported dominance and prestige; Simmons and Roney 2011). This study failed to find evidence for an interaction between the androgen receptor gene and basal testosterone levels,

but the possibility remains that fluctuating levels of testosterone may interact with androgen receptor genes to influence social status. Other research shows that basal testosterone interacts with the serotonin transporter gene (5-HTTLPR) to regulate status-related processes. Individuals with high testosterone showed a stronger cortisol response to status-related stressors when these individuals were also carriers of the short allele of 5-HTTLPR (Josephs et al. 2012). Although untested, it is possible that this serotonergic gene by testosterone interaction may underlie behavioral responses to status threats as well.

Neural Mechanisms

Another aspect of the social endocrinology of status that needs further attention is the neural correlates of hormones and hierarchies. Studies utilizing hormones and functional magnetic resonance imaging (fMRI) have documented neural networks associated with testosterone (Höfer et al. 2013), oxytocin (Bethlehem et al. 2013), estradiol (Maki and Resnick 2001; Craig et al. 2008), and cortisol (Dedovic et al. 2009; Lovallo et al. 2010) that may underlie the effects these hormones have on status-relevant behavior. While some studies have begun to elucidate neural networks important for the perception of status (Chiao et al. 2009; Zink et al. 2008), the next leap forward for social endocrinology is to isolate neural networks that explain the relationship between hormones and behaviors related to dominance and status-seeking (e.g., reduced orbitofrontal cortex activity as a mediator of the association between testosterone and status-seeking behavior, Mehta and Beer 2010).

Health

Several decades of research have demonstrated that low status is associated with increased morbidity and mortality from cardiovascular disease, Type-2 diabetes, and obesity (Li et al. 2007; Rosmond and Björntorp 2000a), even in a continuously employed sample with universal access to healthcare (Chandola and Marmot 2010). Cortisol dysregulation has been implicated in leading to these poor health outcomes (Adler et al. 1994; Li et al. 2007), but future work should examine the causal relationships between acute stress, cortisol, and poor health outcomes inherent to low status. Other hormones should be investigated as well. For example, oxytocin and polymorphisms in its receptor gene reduce the cortisol (Chen et al. 2011) and cardiovascular (Norman et al. 2012) responses to stress. Thus, oxytocin could represent a pathway by which social connections alter health within a status hierarchy. Estradiol and testosterone are also thought to relate to cardiovascular health through subtle alterations of cardiovascular functioning (Pérez-López et al. 2010), though more research on these hormones is needed in the context of status hierarchies and health.

Vasopressin and other Hormones

Arginine vasopressin, or just vasopressin, is a neuropeptide hormone that has attracted attention as a potential modulator of status and dominant behavior in animal studies, but little is known about vasopressin's role in human social status. Like the molecularly similar hormone oxytocin, vasopressin improves social memory and cooperation (Benarroch 2013) but, unlike oxytocin, vasopressin *augments* the cortisol response to social stressors (Shalev et al. 2011). Additionally, the effects of testosterone on certain aspects of status may depend on an interaction with vasopressin. Flank marking and territorial aggression in Syrian hamsters, both indicators of status, depend on interactions between testosterone and vasopressin concentrations (Koolhaas et al. 1990; Albers and Cooper 1995). In humans, testosterone's role in coordinating a response to status threat likely works through vasopressin-mediated neural pathways (Bos et al. 2012), though few human studies have examined vasopressin in this context. Future work should focus on the effects of vasopressin in human hierarchies, particularly in relation to its interaction with testosterone. Other steroid hormones such as dehydrepiandrosterone (DHEA, and its sulfate form DHEA-S) may also be involved in behaviors implicated in status, possibly by buffering emotional responses to social stressors (Akinola and Mendes 2008).

Multiple Routes to Status

Social endocrinology research has focused almost exclusively on dominance as a behavioral route to individual status attainment, but humans rise in social hierarchies not only through dominance but also through prosocial behaviors such as building social connections and sharing expertise (Anderson and Kilduff 2009b; Cheng et al. 2013). More research is needed on the social and neuroendocrine mechanisms for these other routes to status. Although some research suggests that testosterone suppresses cooperative behaviors (Mehta et al. 2009), a recent study showed that testosterone enhances prosociality in contexts in which such behaviors may be beneficial for status. Testosterone administration decreased prosocial behavior when there was a threat in the social environment (the threat of betrayal), but testosterone boosted prosocial behavior when there was no threat (a benevolent social interaction) (Boksem et al. 2013). The authors speculate that testosterone may have increased prosociality in the nonthreatening situation because building social connections may be more important than dominance for achieving status in this context. Oxytocin and progesterone are other candidate hormones that may help an individual gain status through affiliative behaviors (Bartz et al. 2011; Wirth and Schultheiss 2006), but no research to date has studied these hormones in the context of individual-based (as opposed to group-based) status hierarchies. Future research should continue to examine the biosocial mechanisms that regulate prosocial routes to gaining and maintaining status in human hierarchies.

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Chapter 14
Neural Basis of Social Status Hierarchy

Narun Pornpattananangkul, Caroline F. Zink and Joan Y. Chiao

Introduction

Social status hierarchy refers to social relations between individuals and groups of individuals that rely on a differential rank or social roles, such as dominant or high status and submissive or low-status roles that affect access to resources necessary for survival (Fiske 1992; Sidanius and Pratto 2001). Across the animal kingdom, individuals and groups who are high in social status are more likely to receive preferential access to or quantity of resources, compared to those who are low in social status. Social status may refer to both situational and dispositional attributes of people and groups. For instance, African cichlid fish when in a high dominance or territorial social role, typically display phenotypic features, such as larger gonad size, that resembles masculinity, whereas those in a submissive or low territorial social role, show phenotypic features, such as smaller gonad size, that resembles femininity (Fernald 2012). Moreover, people with high social dominance orientation (SDO) refer to a personality preference for hierarchical social relations, whereas people with low social dominance orientation (SDO) prefer egalitarian social relations (Pratto et al. 1994; Sidanius and Pratto 2001). Groups, such as cultures and organizations, may similarly vary in preference for social status hierarchy, a cultural dimension known as power distance (Hofstede 2001). Cultures that are high in power distance expect or accept that social power will be distributed in a hierarchical fashion, whereas cultures low in power distance strive for social power to be distributed in an egalitarian fashion (Hofstede 2001).

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Hierarchical social relations refer to a core dimension of social relations that define groups and individuals. Both in historical and contemporary human society, the ability to gather or create resources necessary for survival, such as primary and secondary rewards (e.g., food, land, social reputation, currency, close social bonds, technology, knowledge), may vary depending on social hierarchy (Fiske 1992; Sidanius and Pratto 2001). Stable social hierarchies typically refer to an expectation of social roles across individuals that refer to an unequal distribution of resources, depending on motivation or skill. High-status individuals may expect preferential access to increased quantity or quality of resources, and in return low-status individuals may expect parental care or to receive resources from those who are higher in social-status roles.

The ability to recognize, maintain, and navigate social-status signals in the environment is often crucial for individual and group's survival. Without proper understanding of the social role expectations and rules for one's self and other group members, the rituals of obtaining and distributing necessary resources from the environment may become compromised. Due to the evolutionary significance of social dominance, detection of hierarchical social interactions emerges during infancy (Mascaro and Csibra 2012; Thomsen et al. 2011), with acquisition of psychological capacities and neurobiological structures for adhering to cultural and societal norms of social status occurring throughout childhood and adolescence (Hawley 1999). The development of the ability to regulate one's behavior is likely a crucial milestone for social status cognition, as impulses and habits of the individual become more controlled, sensitized, and responsive to environmental or cultural demands. The physiological and psychological risks and benefits of occupying a low or high status within the group also change across development as neural circuitry necessary for fulfilling social roles and social status abilities mature and subsequently decline in later life (Hackman et al. 2010; Noble and Farah 2013).

In this chapter, we review interdisciplinary evidence for the neurobiological basis of social status hierarchy, primarily in humans. In the following sections, we provide a comprehensive overview of (a) neural systems of social status hierarchy, including those associated with stable and unstable hierarchies, (b) neurotransmitter systems of social status hierarchy, (c) gene-environment interaction of social status hierarchy, and (d) cultural neuroscience of social status hierarchy. In the final section, we discuss the existing gaps in the literature and the implications of the neural basis of social status hierarchy for improving human health.

Neural Systems of Social Status Hierarchy

Neural Encoding of Social Status Within Stable and Unstable Hierarchies

In order to appropriately process and react to hierarchical information surrounding others within a social hierarchy, neural systems must exist that distinguish between high and low-social ranks in both stable and unstable hierarchical settings. In stable

hierarchies, where hierarchy-related conflicts are minimal, social ranks are established and unchanging. Alternatively, periods of hierarchical unrest resulting from fluctuation of group members or group conflict render the hierarchy unstable; and during this time, a subordinate can overtake the dominant position and vice versa. Generally, in primates, dominant individuals may recruit more neural resources than subordinates by virtue of being more significant determinants of behavior (Cummins 2000). Researchers have begun to identify particular brain regions that differentially respond to the relative high and low social status of individuals within stable and unstable hierarchy settings. In one such investigation (Zink et al. 2008), an experimental human social hierarchy was established based on incidental skill in the context of a simulated, interactive game with others. Under stable conditions, the initial hierarchical ranks were static and unchanging, whereas an unstable condition was introduced by allowing social ranks to update based on performance (i.e., skill) throughout the game. By implementing this paradigm during functional MRI, Zink and colleagues determined four brain regions that preferentially activate when viewing someone of relatively higher compared to lower status in both stable and unstable hierarchies: parahippocampal cortex, occipitoparietal cortex, ventral striatum, and lateral prefrontal cortex. Each of these regions is involved in a distinct cognitive process which is influenced by social status, and is particularly engaged to a great extent during interactions with higher-rather than lower-ranked individuals.

Recognition of others' relative ranks within a hierarchy depends on one's ability to contextually encode the association between hierarchical status and the particular person to whom it pertains. The parahippocampal cortex is central to the mediation of contextual associations (Aminoff et al. 2007; Bar et al. 2008); in humans, its activity increases in response to faces that are highly associated with a context (e.g., famous faces) compared to faces that lack contextual association (Bar et al. 2008). Within both stable and unstable interactive hierarchies, the human parahippocampal cortex is preferentially activated by viewing a relatively superior individual (Zink et al. 2008), suggesting that the neural processing of the contextual association between status and person is greater for high status compared to low-status individuals.

For primates, social information is most readily acquired via visual observation (Haude et al. 1976) and within a hierarchy, dominant animal demand the visual attention of subordinate animals more so than vice versa (Chance 1967; Deaner et al. 2005; Foulsham et al. 2010). Such increases in the attentional and/or perceptual processing of a dominant figure are likely driven by activation in the occipitoparietal cortex (Bradley et al. 2003), a brain region preferentially engaged in human hierarchy when one is faced with someone of higher rank compared to lower rank (Zink et al. 2008). This is the case in nonhuman primates as well. Event-related potentials (ERPs), specifically the N2 ERP component, measured over occipital/parietal sites are larger when monkeys view photographs of familiar dominant conspecifics than when viewing corresponding low-status pictures (Pineda et al. 1994). Furthermore, intraparietal neurons increase firing when a monkey is presented with and makes the choice to view a dominant monkey (the preferred option) but only in the context of making a decision whether or not to orient to it (Klein et al. 2008).

This suggests that rather than coding social value per se, lateral intraparietal neurons may integrate value with the decision to orient, thus facilitating the direction of attention to important stimuli, such as those individuals with high status.

While activity in the occipitoparietal cortex does not directly represent social value, the increased attention paid to those of higher rank likely corresponds with greater value placed on high-status primates. Top-ranked individuals in a hierarchy may be considered behaviorally aversive due to their threatening nature; however, they still carry more salience than low-ranked individuals by providing valuable information to guide behavior (Deaner et al. 2005; Klein et al. 2008). The social value associated with higher status is likely coded in the increased ventral striatal response that manifests when facing a higher-status individual compared to lower status within a human interactive hierarchy (Zink et al. 2008). Activity in the ventral striatum has been strongly implicated in the processing of motivational value and salience, irrespective of hedonics (Blitzer et al. 2013; Jensen et al. 2006; Zink et al. 2003, 2006). This interpretation of the ventral striatal status-related response is supported behaviorally using a choice selection paradigm in monkeys. Monkeys prefer to gain access to higher status compared to low-status monkeys and are even willing to sacrifice getting a juice reward to do so (Deaner et al. 2005). Interestingly, the preferential desire to view dominant monkeys is dependent on one's own social rank. While dominant monkeys favor viewing other high-ranked monkeys over low-ranked, subordinate monkeys will also attend to conspecifics of low status (Shepherd et al. 2006). Complimentary to these findings, in humans, one's socioeconomic status (SES) influences the ventral response to SES information about others. For people of high SES, the ventral striatum is preferentially activated by exposure to information regarding a high-status individual, which is not the case for people of low SES (in whom the ventral striatum is activated by information about low-status individuals) (Ly et al. 2011). The value placed on dominance in a hierarchy, and hence the striatal response to status information, is influenced by one's rank in a hierarchy.

Much of the value surrounding dominant figures in primate hierarchies stems from their ability to guide advantageous behavior and promote social norm compliance. Social norms that determine "permitted, obligated, or prohibited" behaviors are defined and maintained by hierarchies, and importantly, dominant individuals are typically responsible for punishing social norm violators. Activity in the dorsolateral prefrontal cortex (DLPFC) is associated with the degree of social norm compliance in the presence of an agent who can punish social norm violations (Spitzer et al. 2007), and DLPPC can possibly integrate contextual information and exert cognitive control over behavior via anatomical connections to the parahippocampal cortex (Bar et al. 2008; Goldman-Rakic et al. 1984) and motor system structures (Miller and Cohen 2001), respectively. The DLPFC is another brain region more activate when interacting with a higher-ranked as opposed to lower-ranked individual in experimentally created human stable and unstable hierarchies (Zink et al. 2008). Therefore, the DLPFC possibly exerts greater cognitive control over behavior selection in the context of interacting with a hierarchically superior person because of the pertinence of appropriate behavior in the presence of high-status individuals.

Activity in the aforementioned brain regions (namely, parahippocampal cortex, occipitoparietal cortex, ventral striatum, and DLPFC) is preferentially heighten by exposure to a higher-rank individual compared to lower-ranked individual in both stable and unstable hierarchical settings. Differential social status-related activation in several other brain regions, however, occurs only during periods of hierarchical instability, when change in rank is possible. In the paradigm created by Zink et al. (2008), human hierarchical instability was induced by allowing relative ranks to repeatedly change according to performance. Specifically, viewing a person of particular status occurred just prior to playing a skill-based game with that individual, the outcome of which impacted future status rankings. Motor-related brain areas (sensorimotor cortex and supplementary motor area [SMA]), medial prefrontal cortex (MPFC) and the amygdala were all more engaged when facing a person of higher status than a person of lower status in this unstable human hierarchy setting. Sensorimotor cortex and SMA are not only activated by actual movement but also by imagined movement, indicative of involvement in motor preparation (Lotze et al. 1999). Therefore, activation of these motor-related areas evoked by viewing a superior individual may represent an increase in motor preparation driven by greater behavioral motivation when interacting with someone of higher status as opposed to lower status in an unstable hierarchy. The MPFC plays a critical role in recognizing and reasoning about the intentions of others ("mentalizing"), forming judgments of others ("person perception") and understanding how others view us ("reputation") (Amodio and Frith 2006). As such, the preferential MPFC response to someone of higher rank in an unstable hierarchy implies greater encoding of the agenda of that individual, which is beneficial for predicting his/her future actions (Amodio and Frith 2006). The amygdala plays a central role in recognizing emotional salience in social environments (Amaral 2002). In an unstable hierarchical setting, activation in the amygdala elicited by viewing an individual in the coveted superior position as opposed to the inferior position speaks to a heightened emotional arousal to the higher-ranked individual. Indeed, this status-related amygdala response is correlated with one's self-reported desire to occupy the top hierarchical position (Zink et al. 2008). Similarly, in nonhuman primates, jealousy induced by social hierarchical challenge is accompanied by an increase in amygdala activity (Rilling et al. 2004).

The amygdala is also critically involved in the production of appropriate emotionally driven reactions (Amaral 2002) that are important during periods of social hierarchical instability. Neurotoxin lesions of the monkey amygdala (which spare adjacent cortical areas and passage fibers) have been shown to increase social fear and decrease aggression, resulting in an inability to achieve dominant status during the formation of hierarchy in a group of unfamiliar monkeys (Bauman et al. 2006). These effects of amygdala lesion, however, may be dependent on age at the time of lesion or group familiarity (Bachevalier and Malkova 2006); in another study, neurotoxin amygdala lesions in adolescent monkeys did not affect hierarchical ranks when the lesioned monkeys were reintroduced back into a familiar group with a previously established hierarchy. Rather, after reintroduction, monkeys regained their original status, despite the amygdala-lesioned monkeys displaying abnormal social behaviors (e.g., increase social fear) (Machado and Bachevalier 2006). Addition

investigations are therefore necessary to gain a full understanding of the influence of amygdala lesions on social behaviors and consequential social rank during hierarchical instability.

Neural Processing of "Hierarchically Valuable" Events

During periods of hierarchy instability, social ranks within a hierarchy can be redefined based on particular competitive performance-based outcomes or circumstantial incidents. Such a "hierarchically valuable" event can be either positive or negative for a given individual depending on the impact it has on one's current social standing. For example, within an unstable hierarchy, outperforming a superior can increase one's status and thus such an event is associated with positive hierarchical value. On the other hand, being outperformed by an inferior can cause a drop in one's social ranking and is associated with negative hierarchical value (Marr and Thau 2013). Alternatively, outperforming an inferior or being outperformed by a superior are events that do not carry hierarchical value because such outcomes do not change one's status but rather reinforce the current hierarchical ranking (Zink et al. 2008). Using an experimentally created unstable hierarchy, in which ranks adjust according to performance in a skill-based hierarchy (described in the previous section) during functional MRI, Zink and colleagues were able to isolate human neural responses to both positive and negative hierarchically valuable events (Zink et al. 2008).

Certain brain regions appear to respond to hierarchical value irrespective of valence. Specifically, activity within the occipitoparietal cortex and striatum is increased during both positive and negative hierarchically valuable outcomes compared to nonvaluable outcomes (Zink et al. 2008). As described in the previous section, striatal activations convey valence-independent motivational value and salience (Blitzer et al. 2013; Jensen et al. 2006; Zink et al. 2006; Zink et al. 2003). The occipitoparietal activation in response to events associated with hierarchical value likely represents heightened perceptual and attentional processing (Bradley et al. 2003) of hierarchically valuable outcomes due to their consequential nature. While hierarchical value-related activity in the occipitoparietal cortex and striatum does not discriminate between positive and negative valence, the activation patterns in other brain areas are specific to particularly valenced (positive or negative) hierarchically valuable events.

The anterior insula, part of the brain's pain network, is activated when a lower-ranked individual outperforms another (Zink et al. 2008). Activity in this brain region is not only related to physical pain but also emotional pain as evident by its response to social rejection (Eisenberger et al. 2003), frustration (Abler et al. 2005), and empathically watching a loved one in physical pain (Singer et al. 2004). Therefore, the anterior insula response to negative hierarchical value likely represents frustration and emotional pain evoked by a lower-status individual when he/she performs at a relatively superior level. Intuitively, highly ranked individuals in a hierarchy are pegged with the ability to inflict pain (physical and emotional) on those

of lower status; however, during periods of hierarchical instability, the individuals in superior positions are the ones with something to lose. A lower-ranked individual is capable of eliciting emotional pain by virtue of the threat to overtake the more superior position. Additionally, the emotional pain felt by a higher-ranked person when outperformed by someone of lower status should be greater in individuals who most wish to remain in the superior position. In fact, Zink et al. (2008) demonstrated a positive correlation between anterior insula activity levels during negative hierarchically valuable outcomes and the self-reported degree to which one enjoys occupying the top position in the hierarchy (Zink et al. 2008).

Within an unstable hierarchical setting, several brain regions have been shown to increase activity during positive hierarchically valuable events, namely, anterior cingulate, dorsomedial prefrontal cortex, and motor areas such as dorsal premotor cortex and pre-SMA (Zink et al. 2008). The primate anterior cingulate gyrus is critical for mediation the valuation of social stimuli. In nonhuman primates, anterior cingulate gyrus specific lesions induce a social devaluation of dominant rank (Rudebeck et al. 2006). The anterior cingulate activation to positive hierarchical value, therefore, may convey the high social importance of outperforming a superior. A sense of retaliation can also accompany the outperforming of a superior figure, which is coded in the dorsomedial prefrontal cortex, as this region has previously been shown to play an important role in social retaliation (Lotze et al. 2007). Activity in the dorsal premotor cortex and pre-SMA has previously been associated with higher-order action disposition (Lotze et al. 1999; Picard and Strick 1996), which raises the intriguing possibility that positive hierarchically valuable outcomes which can lead to acquiring a more superior position activate brain regions that evoke a bias towards an abstract "active," as opposed to passive, state (Zink et al. 2008). These activation patterns that are evoked by positive, as well as negative, hierarchically valuable events were all determined in a performance-based context. It is unclear whether the same or different neural activity would emerge in response to circumstantial incidents that can alter ranks within a hierarchy.

Neural Basis of Perception and Representation of Hierarchy Knowledge

The ability to accurately infer social status within a hierarchy is critical to survival and may occur by decoding distinct kinds of nonverbal cues, such as facial and body postures (Chiao et al. 2008; Marsh et al. 2009). The capacity to both express and recognize social status from nonverbal cues represents a core social cognitive capacity supported by a number of distinct brain regions. For instance, unlike moral cognition, patients with ventromedial prefrontal brain damage show intact social status recognition, despite the inability to make typical moral judgments or understand social norms, suggesting the importance of understanding social status cues (Karafin et al. 2004). Convergent evidence from neuroimaging studies of social status inference show that a network of brain regions, specifically the inferior parietal lobe (IPL), dorsolateral and ventrolateral prefrontal cortex (DLPFC, VLPFC),
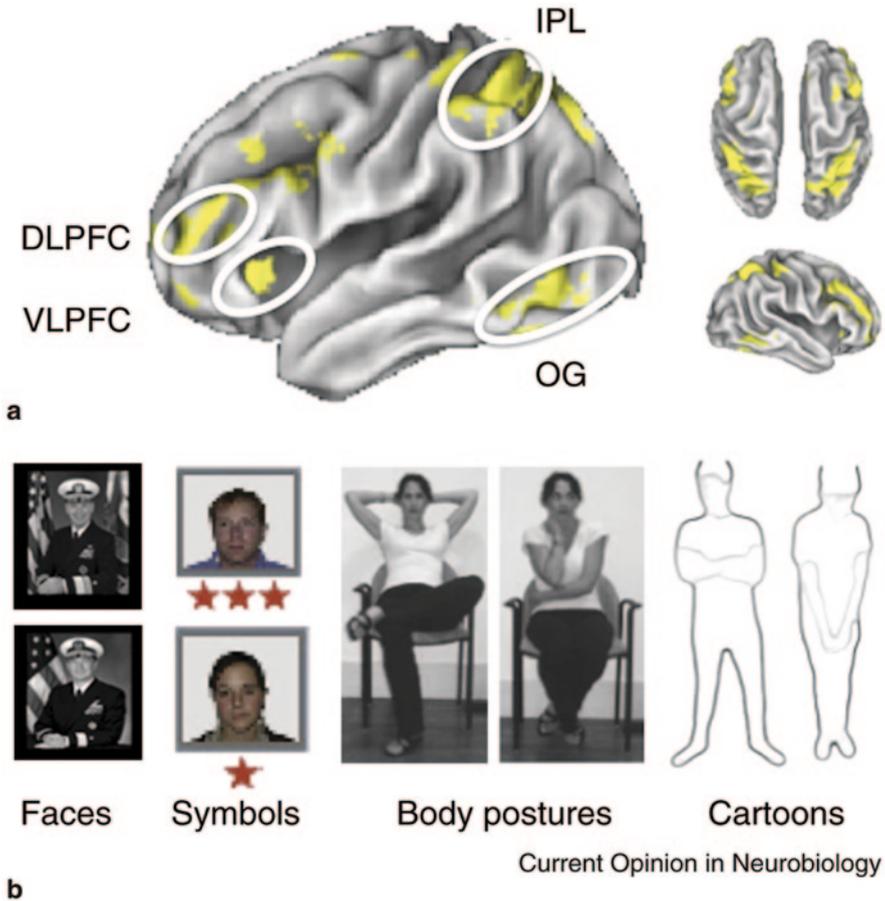
Fig. 14.1 Neural bases of social status hierarchy (adapted from Chiao 2010). **a** Brain regions typically associated in recognizing social status of others. *IPL* inferior parietal lobe, *DLPFC* dorsolateral prefrontal cortex, *VLPFC* ventrolateral prefrontal cortex, and *OG* occipitotemporal gyrus. **b** Example stimulus material from neuroimaging studies of social status hierarchy, including facial postures (Chiao et al. 2009), symbols (with kind permission from C. Zink), body postures (with kind permission from A. Marsh), and cartoons (with kind permission from J. Freeman and N. Ambady)

as well as posterior regions of the occipitotemporal lobe, such as the fusiform and lingual gyrus, are recruited during the inference of social status or dominance from nonverbal cues (Fig 14.1).

Across the animal kingdom, physical cues, such as body size, provide important information about the status of others within a given hierarchy. Facial and body postures that expand perceived or actual body size are often inferred as dominance displays, whereas facial and body postures that constrict or restrict actual body size and inferred as submissive displays. Additionally, facial features such as direct gaze that signal approachability and mature facial features that signal older age provide im-

portant cues of social status. Perceiving social status from the face occurs rapidly, approximately 170 ms, after the initial percept is shown within occipitotemporal regions of the face, including the fusiform and lingual gyrus (Chiao et al. 2008). Furthermore, neural response within the fusiform and superior temporal gyrus increases when perceiving directly compared to averted eye gaze, suggesting that enhanced attention toward high status cues modulates neural bases of social perception (Chiao et al. 2008). Lateral prefrontal cortex is engaged when inferring social dominance and submission from nonverbal cues, such as expanded or restricted body postures, likely due to the importance of retrieving and maintaining knowledge of social rules in accordance and in response to appropriate social status signals (Marsh et al. 2009). During more complex social tasks such as watching social interactions that involve authority rank compared to communal relations, the anterior portion of the superior temporal gyrus is also recruited, suggesting that neurons within this brain region codes for rank relations to a greater extent compared to horizontal social relations (Iacoboni et al. 2004), possibly due to the variability of social attention and gaze following during hierarchical social interactions (Allison et al. 2000; Ellyson and Dovidio 1985) and possibly experience of cognitive fluency when learning social hierarchical information (Zitek and Tiedens 2012).

In order to determine the relative status of people and objects, the brain requires machinery that enables comparison as well as representation of features or dimensions by which the social status of information can be inferred. Numerical comparison, or determining the relative amount of space, time, size or quantity, of a person's appearance or belongings appears to be crucial to social status inference (Chiao et al. 2004, 2009). People take longer time to compare two objects or numbers that are closer in numerical value compared to those farther in numerical value, a phenomenon known as the numerical distance effect (Deheane et al. 2009; Cohen-Kadosh et al. 2008; Walsh 2003). In behavioral studies of the mental representation of social status, Chiao et al. (2004) showed that naval Reserve Officers' Training Corps (ROTC) cadets were slower to compare not only numbers but also naval ranks, closer together in quantity and status, respectively, relative to those farther apart. These findings suggest that mental representations of social status share spatial properties similar to those of number.

Several neuroimaging studies have sought to identify the neural mechanisms responsible for the representation of social status knowledge. One putative mechanism is the inferior parietal sulcus (IPS) due to the important role that this brain region plays in the representation and manipulation of quantitative information (Cohen-Kadosh et al. 2008; Walsh 2003). Supporting this hypothesis, Chiao et al. (2009) found that activity within the IPS was higher when judging social and physical status cues, such as faces and objects, that were closer in social rank compared to those farther in rank, demonstrating that neural magnitude is a predictor of status distance (Chiao et al. 2009). Status may be achieved not only with the acquisition of material resources but also with the acquisition of moral resources, such as spiritual or divine respect. When inferring social status in both the financial and moral domains, Cloutier et al. (2012) recently found that IPS was recruited similarly during financial and moral status judgments, demonstrating that both perceptual and conceptual

representations of social status are stored within the IPS. Future research with a multimethod approach, including transcranial magnetic stimulation studies, lesion studies, and neuroimaging studies using multivoxel pattern analysis, are needed to determine whether neural representations within the IPS are necessary to compute social status judgments as well as the relative distinctiveness or overlap in neural representations within social status and nonstatus judgments related to number, space, and time, which have been previously demonstrated as stored within the IPS.

Neurotransmitter Systems of Social Status Hierarchy

Serotonin Neurotransmitter System

In several species, the serotonergic system is implicated in the determination and maintenance of social status within a hierarchy. Serotonin is critical for the regulation and expression of social aggression (Lucki 1998), serving to dampen aggressive behaviors and enhance affiliative behaviors toward others (Carrillo et al. 2009; Raleigh et al. 1991). The importance of aggression or affiliative interactions to establish social status varies by species. Therefore, the directionality of the association between serotonergic activity and social rank is dependent on the species-specific preponderance of aggressive versus affiliative behavior to establish status.

For some species, including lizards, rats, and certain primates, dominance is largely determined and maintained by successful aggressive interactions and fighting prowess. In such species, enhanced serotonin activity has been associated with diminished social status. For example, pharmacological enhancement of serotonin neurotransmission in dominant lizards and rats—via the use of selective serotonin reuptake inhibitors (e.g., femoxetine and sertraline), serotonin receptor agonists (e.g., quipazine), and serotonin precursors (e.g., tryptophan and 5-hydroxytryptophan)—negates or reverses dominant status, i.e., the dominant animals become subordinate (Kostowski et al. 1984; Larson and Summers 2001). On the other hand, pharmacological dampening of serotonergic function—via serotonin synthesis blockage with p-chlorophenylalanine, administration of the serotonin receptor antagonist, metergoline, or by lesioning the ralphe nucleus where serotonergic neurons originate—transformed subordinate rats into dominant rats (Kostowski et al. 1984). Furthermore, female cynomolgus monkeys with lower baseline cerebral spinal fluid (CSF) concentration levels of the major serotonin metabolite, 5-hydroxyindoleacetic acid (5-HIAA)—an indicator of serotonin activity—become dominant rather than subordinate during hierarchy formation, and CSF 5-HIAA remains remain lower in dominant animals in stable hierarchies (Riddick et al. 2009). Also, it has been demonstrated that talapoin monkeys with higher levels of CSF 5-HIAA during hierarchy formation occupy subordinate positions (Yodyingyuad et al. 1985). Moreover, subordinate rats have higher brain tissue levels of 5-HIAA in the preoptic area, amygdala, hippocampus, spinal cord, and entorhinal cortex compared to dominant and individually housed rats (Blanchard et al. 1991, 1993). While the aforementioned

findings provide strong evidence for a negative correlation between activation of the serotonergic system and dominant status, such directionality appears to be specific to those species that rely on aggression for dominant-status achievement.

In several primate species, including vervet monkeys, rhesus macaques, and humans, high status is predominantly established by the ability to form affiliative relationships and by the ability to recruit allies during conflict, rather than an individual's fighting ability (de Waal 1986; Higley et al. 1996; Raleigh et al. 1991). Within such species, increased serotonin activity has been associated with heightened social hierarchical rank. For example, during hierarchical instability, in vervet monkeys, occupation of the dominant position can be prevented by pharmacological dampening of central serotonergic activity via administration of cyproheptadine, a serotonin receptor antagonist, or fenfluramine, an amphetamine derivative which decreases serotonin function when given chronically. Alternatively, pharmacological enhancement of central serotonin activity—via administration of the serotonin precursor, tryptophan, or serotonin reuptake inhibitor, fluoxetine—leads to obtainment of high social status (Raleigh et al. 1991). Furthermore, it has been demonstrated in male vervet monkeys that whole-blood serotonin concentrations are significantly greater in dominant individuals than subordinate, and these levels are altered during status change; status changes from subordinate to dominant are accompanied by a rise in blood serotonin concentration, while changes from a dominant to a subordinate position or to social isolation are accompanied by a decline in serotonin concentration (Raleigh et al. 1984). Enhanced serotonin activity being associated with heightened social status has been shown in rhesus macaques. Specifically, higher baseline CSF 5-HIAA (a major serotonin metabolite) predicts acquisition of higher rank during hierarchy formation (Higley et al. 1996), and CSF 5-HIAA levels remain significantly elevated in the individuals holding the dominant compared to subordinate position in stable social hierarchies (Higley et al. 1996; Westergaard et al. 1999). Similar evidence in humans is scarce because the situation in humans is complicated by the fact that people simultaneously occupy different social ranks in multiple different hierarchies (Raleigh et al. 1984); however, it has been shown that healthy individuals treated with citalopram, a selective serotonin reuptake inhibitor, are judged by their peers to be less submissive, display dominant patterns of eye-contact in social interactions, and engage in more affiliative and cooperative behaviors with others (Tse and Bond 2002).

Dopamine Neurotransmitter System

Evidence suggests that the position one holds in a social hierarchy can have profound consequences on the dopaminergic neurotransmitter system. Using positron emission tomography (PET), researchers have shown that uptake of striatal $[^{18}F]4$-fluoroclebopride ($[^{18}F]FCP$), a radioligand that binds to available dopamine D2 receptors with high affinity (Mach et al. 1996), is greater in dominant female cynomolgus monkeys compared to subordinate counterparts (Grant et al. 1998). A strikingly similar effect has also been determined in humans. In men and women, the

availability of striatal D2 receptors—as measured by PET [11C] raclopride-binding potential—is strongly correlated with one's social rank and levels of social support (Martinez et al. 2009). In animals, it has been established that this change in striatal D2 receptor availability occurs in the dominant rather than subordinate animal; the ligand uptake measured in subordinates is not different than measurements taken during social isolation, whereas dominant monkeys demonstrate a significant increase in ligand uptake relative to isolation (Morgan et al. 2002). Once an original rank and corresponding alterations to the dopaminergic system have been established, it appears that the dopaminergic neurochemical profile cannot be altered or updated corresponding modifications in the dopaminergic system require more time to materialize than following original hierarchy formation. Nader and colleagues have found that 3 months following experimentally induced hierarchical rearrangement, newly dominant cynomolgus monkeys (some of which were previously subordinate) do not have higher levels of D2 receptor availability compared to newly subordinate monkeys (some of which were previously dominant) (Nader et al. 2008).

The higher levels of striatal [^{18}F]FCP uptake in dominant animals may occur because of increased D2 receptor levels and/or a decrease in synaptic dopamine levels, possibly due to enhanced environmental enrichment experienced in the high-status position (Morgan et al. 2002). Deprivation of environmental enrichment, i.e., isolation, is associated with elevated striatal dopamine levels and decreases in striatal receptor density (Hall et al. 1998; Rilke et al. 1995). It follows, therefore, that acquiring dominant rank, which allows animals to be in more control of environmental enrichment, may result in neurochemical changes that decrease basal striatal dopamine levels in high-status individuals resulting in the observed increase in ligand uptake (Morgan et al. 2002). Interestingly, this effect may be specific to the striatum; dopaminergic activity in the prefrontal cortex, as measured by levels of the dopamine metabolite, dihydroxyphenylacetic acid (DOPAC), is reduced in isolation (Blanc et al. 1980). In fact, contrary to what would be expected based on the direction of the status-dopamine relationship demonstrated in the striatum, CSF levels of the dopamine metabolite, homovanillic acid (HVA)—an indirect measure of dopamine neural activity—are greater in dominant cynomolgus monkeys than subordinate monkeys (Kaplan et al. 2002). CSF measures lack regional specificity, and these CSF HVA levels may be reflecting dopamine activity in the prefrontal cortex rather than the striatum. Future research is required, however, to conclusively explain directionality inconsistencies and to elucidate the exact neural mechanisms underlying status-related alterations of the dopaminergic system.

Gene-by-Environment Interaction in Social Status Hierarchy

The importance of gene-by-environment (GxE) models of human behavior and psychopathology has become more understood; however, little is known about how genetic and environmental factors interact to produce and maintain social status

hierarchies. Regulation of one's behavior and emotion appears to play an important role in establishing and maintaining a social status hierarchy. In chimpanzees for instance, subordinate apes are more likely to regulate their responses when going for food in the presence of dominant apes, especially when they know that the dominant can see where the food is placed (Tomasello et al. 2003). In humans, people often vary in their behavioral regulation as a function of social status hierarchy. Those who have lower social power and status often display inhibited, constricted postures (Ellyson and Dovidio 1985; Hall et al. 2005), suggesting high regulation of behavior (Keltner et al. 2003). Additionally, a recent ERP study provided convergent evidence on the influence of social status hierarchy on regulation by looking at neurocognitive components underlying performance monitoring processes, namely, feedback related negativity (FRN) (Boksem et al. 2012). In this study, an experimental paradigm that was designed for establishing social status in an fMRI context, discussed earlier (Zink et al. 2008), was adapted for an ERP context. Low-status, compared to high status, individuals were found to elicit higher FRN, reflecting enhanced neurocognitive processes for performance evaluation when they saw the outcome of their task. This elevated FRN suggests that people have a higher tendency to regulate their behaviors, possibly through enhanced monitoring processes, when they are in a low-social status hierarchical situation.

Nonetheless, this increase in behavioral regulation seems to be targeted specifically at stimuli that are relevant in a social status hierarchical situation, and furthermore, may impair regulation toward nonstatus-relevant stimuli, possibly due to the increase in distractibility from nonstatus-relevant environmental cues (Boksem et al. 2012a). This has been demonstrated in behavioral experiments where participants were assessed in their ability to regulate during nonstatus-relevant tasks after being primed with social status hierarchy using tasks such as completing a scrambled-sentences priming task consisting of social status hierarchical words (e.g., subordinate and authority) (Smith and Trope 2006) or writing an essay about a situation where they had higher social power than others (Galinsky et al. 2003). The essay prime on social status hierarchy was recently found to induce brain activity related to approach and withdrawal motivational systems, as indicated by EEG frontal alpha asymmetry indexes (Boksem et al. 2012b). After being primed with low-social status hierarchy, people's regulatory ability toward nonstatus-relevant stimuli worsened (Smith et al. 2008), as suggested by poorer inhibiting and by poorer planning performance in Stroop Color Naming (Stroop 1935) and Tower of Hanoi (Goel and Grafman 1995) tasks, respectively. High-social status hierarchy priming, on the other hand, was associated with an enhancement in regulation during subsequent attention tasks (Guinote 2007), such as Frame-Line (Kitayama et al. 2003) and Novon's Focal-Local (Navon 1977) tasks. Similar to these lines of research, SES, as a chronic social status hierarchy, has also been shown to influence neurocognitive processes of regulation in a similar fashion (for review see Hackman et al. 2010). For instance, 8–12 year-old children from low-SES families performed worse in inhibitory control and cognitive flexibility tasks than their high-SES counterparts (Sarsour et al. 2011). In addition, ERP studies have shown impairment in selective attention ability among low-SES children. This group of children usually has poorer
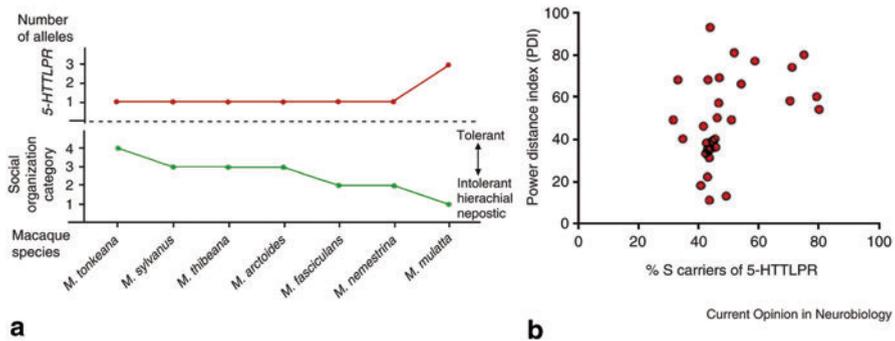
Fig. 14.2 Gene-by-environment interaction model of social status hierarchy (adapted from Chiao 2010). Relation between allelic variation of the serotonin transporter gene (*5-HTTLPR*) and social hierarchy across species. **a** Macaque species that are especially hierarchical, such as the *M. mulatta*, carry at least 1 short allele of the 5-HTTLPR, whereas macaque species that are tolerant are monomorphic for the long allele of the 5-HTTLPR (adapted from Canli and Lesch 2007). **b** Nations that are more hierarchical (as indexed by greater power distance) have a greater prevalence of humans who carry at least 1 short allele of the 5-HTTLPR, r (31) = 0.39, $p < 0.05$

suppression ability for nonrelevant stimuli when compared to high-SES children (e.g., Kishiyama et al. 2009; Stevens et al. 2009).

Genetic and cultural factors seem to interact with regulatory process in social status hierarchy. Genotypes of some polymorphisms, such as those of serotonin transporters *5-HTTLPR* and oxytocin receptor *OXTR* genes, have been identified as being associated with regulation, especially in the case of emotion (Canli et al. 2009; Hariri and Forbes 2007; Kim and Sasaki 2012; Murakami et al. 2009). These genes, in turn, may influence how organisms react and regulate their behaviors in a social hierarchical environment. For example, in rhesus macaques, *Macaca mulatta*, short–long allele carriers (SL) of *5-HTTLPR* spent less time gazing at the eye region of face images and showed larger pupil dilation when looking at the pictures of dominant moneys than submissive monkeys (Watson et al. 2009). These effects were weaker among monkeys who carried the long–long allele (LL), perhaps implying the influence of *5-HTTLPR* on intensified or attenuated aversion to social status hierarchical cues. This eye-movement pattern of S-allele macaques toward faces is similar to that which was found among human subjects from East Asia, where a high proportion of S-allele carriers was found (Chiao and Blizinsky 2010) and where social hierarchical power is often unequally distributed, as reflected in high scores in power distance index (PDI) (Hofstede 2001) (Fig. 14.2). Specifically, Blais et al. (2008) demonstrated that East Asian participants from Japan and China spent less time fixating on the eyes of face pictures than Westerner participants from Scotland. East Asian participants tended to avert the eyes and instead focused on the nose region of the images. Additionally, Jarrell et al. (2008) conducted an experiment with the same species of rhesus monkeys, *Macaca mulatta*. In this experiment, the researchers reorganized female monkeys into a new group of five that consisted of different carriers of the *5-HTTLPR* genotype. Hence, these

monkeys were forced to establish a new social status hierarchy within the newly formed group. It was found that S-allele carriers expressed the highest levels of both submissive and aggressive behaviors toward other group members. This pattern of behavior among S-allele carriers is similar to what one would expect from human societies in which cultural values are high in PDI (Hofstede 2001), where high-power inhabitants have a tendency to be aggressive to others while low-power inhabitants are often submissive. Consistent with this view, comparing across all species of rhesus monkeys, Chiao (2010) found that species whose societies are more tolerant with a lenient hierarchy and a relaxed dominance usually carry only the L-allele of *5-HTTLPR*. However, species that are intolerant and have a strict hierarchy, including *Macaca mulatta*, carry at least one S-allele. Additionally, Burt (2008) found evidence of gene-environment correlation or evocative rGE whereby individuals elicit or select experiences consistent with their genotypes. Specifically, Burt (2008) found evidence that the serotonin receptor gene 5-HT$_{2A}$ is correlated with social popularity, suggesting that this gene predisposes people to particular social status outcomes. Altogether, these lines of evidence suggest a complicated interplay between genes and cultures in the regulation of one's behavior in a social status hierarchy, thus opening many interesting questions for future research.

Cultural Neuroscience of Social Status Hierarchy

Cultural norms differ in the extent to which social hierarchy or egalitarianism is reinforced in social interactions, as well as the relative social value of traditional social status cues (Hofstede 2001). Understanding how cultural and biological factors independently and interactively maintain and reproduce social hierarchies is necessary for understanding the evolutionary origins of status hierarchies. Recent evidence from cultural neuroscience indicates that cultural values of social dominance hierarchy modulate neural response during social cognition. Cheon et al. (2011) showed that people living in cultures that strongly prefer hierarchy, such as Korea, show increased left temporoparietal junction (L-TPJ) response when viewing group members in emotional pain, compared to people living in cultures that strongly prefer egalitarianism, such as the United States. People living in hierarchical cultures are more likely to recruit regions associated with conceptual processing of others, such as theory of mind, when responding to their distress cues, whereas people living in egalitarian cultures are more likely to recruit regions associated with simulative processing of others (Chiao et al. 2009; Mathur et al. 2010). Furthermore, Freeman et al. (2009) found cultural variation in the right caudate and medial prefrontal cortex to nonverbal status cues, such as bodily postures, as a function of interindividual variation of dominance. Taken together, these findings indicate that the preference for social hierarchy modulates brain regions important for social cognition as well as empathy and altruism.

Cultural norms reinforce social status signaling not only from nonverbal cues, such as body postures, but also from symbolic cues, such as money. However, the

relative importance of money or intrinsic reward associated with money and financial status varies across cultures, due to cultural influences on processing within the ventral striatum. Kim et al. (2012) recently found that Americans show greater delay in discounting of financial rewards and stronger ventral striatum response to immediate rewards compared to Koreans. Furthermore, rewards elicited greater ventral striatum response in Koreans when presented with delay, indicating correspondence between the neural and cultural valuation of reward. These findings indicate that when people from a short-term orientation culture are exposed to monetary rewards, the ventral striatum shows increased response compared to when people from a culture of long-term orientation are shown monetary rewards, which is likely due to the lack of cultural emphasis on experiencing gain in the immediate context.

Cultural variation in emphasis on family obligation also affects the social value of financial status. Telzer et al. (2010) recently found that whereas Caucasian-Americans show increased mesolimbic response when receiving a monetary reward themselves, by contrast, Latinos showed greater activity in neural reward regions when donating to family, rather than when receiving monetary reward. Growing up a cultural community that emphasizes social harmony with others, Latino adolescents may find monetary rewards less rewarding than social bonds with or fulfillment of social obligations to close others. In turn, showing strong observance of family obligation may neurally be computed as greater in social status or social value compared to financial status or monetary gain.

Importantly, while the brain may not compute gains in SES as intrinsically rewarding compared to fulfillment of social obligations or demonstrations of cultural competence more generally, nevertheless, SES affects how the brain processes information. For instance, people with high SES are more likely to show increased ventral striatum response to high-status information about others, whereas people with low SES are more likely to show increased ventral striatum response to low-status information, indicating that processing social information about others in one's SES is rewarding (Ly et al. 2011). After perceiving others in pain, people with high SES are more likely to show a positive association between neural response within empathic pain regions and charitable donation, whereas people with low SES show a negative association (Ma et al. 2011). People of lower-social status are more likely to recruit neural response within neural regions associated with mentalizing, specifically dorsolateral prefrontal cortex (DLPFC), medial prefrontal cortex (MPFC), precuneus, and posterior cingulate cortex (PCC) (Muscatell et al. 2012). Hence, perceived and actual SES play a key role in modulating neural response within social and affective brain regions. While evolutionarily our brains may have intrinsic mechanisms for maintaining and transmitting social status signals, culture defines and reinforces what kinds of behaviors constitute social status signals as well as the relative fitness value of social status sensitivity as a behavioral phenotype.

Notably, an individual's perception of their relative social status or power can modulate how the brain performs cognitive tasks, such as mathematics. Harada et al. (2012) recently showed that females who were primed with high or low-social power showed differences in neural response when solving approximate math problems

(e.g., is $3+4$ closer to 6 or 9?). Females primed with high-social power performed better compared to people primed with low-social power. Neural response within the left inferior frontal gyrus (IFG), a region previously associated with cognitive interference, was reduced for females in the HP compared to LP group, suggesting that even temporarily heightening a person's sense of social power increases math performance, possibly by reducing cognitive interference. The experience of being high or low power modulates the neural basis of cognition and demonstrates the important influence of social status on how the brain computes.

Conclusion

Social status hierarchies are a fundamental dimension of social life and critical to social organization and group survival. Phylogenetically conserved biological machinery that relies on serotonergic and dopaminergic neural signaling play key roles in regulating brain circuitry associated with the maintenance, regulation, and reciprocity of social status cues. Population variation in functional polymorphisms that regulate serotonin and dopamine neurotransmission likely contribute to the population variation in sensitivity and maintenance of egalitarian or hierarchical social interactions. Likewise, cultural norms and values that explicitly or implicitly reinforce distinct repertoires of social status behaviors within groups account, in part, for the neural variability in response to social status cues across human populations and multicultural communities. Less well-understood is how genetic, environmental, and cultural factors interactively shape the ability and experience of navigating social hierarchies across species and cultures as well as the malleability of a propensity for hierarchical social experience given a possible role for epigenetic mechanisms in the gene-brain-behavior pathway of social hierarchy. Future studies are needed to better understand how developmental changes in brain structure and function correspond with sustained and transient features of social status knowledge and experience, including as the impact of stable and unstable social hierarchies in the social environment, acquisition of cultural knowledge and early-life SES on brain development. A better understanding of the neural mechanisms of social hierarchy may lead to improved preventions and treatments for mental health disorders that involve impaired social status cognition, including autism, and social anxiety disorder.

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Chapter 15
Nonverbal Communication and the Vertical Dimension of Social Relations

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Power and status, and related concepts such as dominance and hierarchical position, are not the same though they overlap and share a common theme of ascendancy, potency, or social importance. We will use the term *vertical dimension* (Hall et al. 2005) to encompass a variety of definitions and functional variations, in contrast to the horizontal dimension reflecting socioemotional closeness (Berger 1994; Osgood et al. 1957; Wiggins 1979).

Verticality can be defined as roles in a formal hierarchy, social influence among friends, privileges of behavior control granted by tradition (parents over children, husbands over wives), accomplishments or endowments in life (education, income), victory in real or symbolic competition, celebrity, respect accorded by others, or the personality trait of dominance, among others. Overlap between these concepts is great; for example, the social status concept has been defined in the same studies as including dominance, importance, prestige, being perceived as commanding and powerful, being perceived as "boss," and being admired and respected (Shariff and Tracy 2009; Tracy et al. 2013).

There are, nevertheless, important differences. For example, a person can have the respect and admiration of others (status) without much asymmetric control over resources (power) (Magee and Galinsky 2008). Furthermore, a person's position on

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the vertical dimension can be possessed or merely yearned for, wanted or not, legitimate or not. There are also degrees of ecological validity in research on the vertical dimension—from naturally occurring statuses, ranks, and traits, to experimentally created roles, to experimental priming where the "power" concept is only activated cognitively.

By "nonverbal communication" we refer to two broad categories: first, the behaviors that people emit with their face, eyes, body, and voice (independent of the words), and, second, people's accuracy in perceiving others' states, traits, and personal characteristics.

The goal of the chapter is to review how the vertical dimension is related to nonverbal communication—a question that researchers have asked for decades. Important to this discussion is the fact that the person who is high or low in verticality may be experiencing many psychological states—emotions, cognitions, and motives—that may play a role, often an unknown role, in the relation of verticality to nonverbal communication either as mediators or moderators (Hall et al. 2005). As examples of mediators, if bosses are better at decoding facial expressions of emotions than the people below them in the hierarchy, perhaps it is because being a boss motivates a person to know those employees or because being a boss brings more opportunity to hone interpersonal perception skills. Psychological states may also serve as moderators; for example, the relation of verticality to nonverbal communication could be different depending on how people in low and high positions are defining and construing their vertical position (for example, what kind of obligations or privileges it affords, or whether they construe their role as other- or self-oriented).

The fact that verticality has many varieties (Hall et al. in press) is relevant to any discussion of its correlates, but it is especially relevant to nonverbal communication because the ways in which verticality may be associated with nonverbal communication are less obvious than for some other kinds of behavior. Some kinds of behavior are conceptually related to vertical position in straightforward ways and are therefore relatively easy to predict. For example, leaders generally try to engage in behaviors designed to lead, bosses usually tell people what to do, people with dominant personalities generally try to exert influence over other people, more educated people use big words, and rich people (and those wanting to seem rich) drive fancy cars.

However, prediction in the case of nonverbal communication is harder to make, for two reasons. One is that nonverbal behavior is often ambiguous in its meaning, so that the same behavior may occur in different circumstances or be displayed by different actors for different reasons. A boss might talk in a loud voice in order to convey authority, but a subordinate might talk in a loud voice in order to impress the boss with her assertiveness.

The other reason prediction is hard when it comes to nonverbal communication is that the psychological states alluded to previously (emotions, cognitions, motives) are likely to be key determinants of nonverbal behavior or accurate interpersonal perception (Hall et al. 2005), yet such states are not so easily predicted from the general concept of "verticality," as the following thought experiments illustrate.

The motive to appear intelligent could be strong in either high-ranking or low-ranking individuals, depending on context. Such a motive could determine who has the more serious demeanor, yet without knowing what state the high and low people are in, no prediction about the effect of verticality on serious demeanor could be made. Along the same lines, either a high or low person could be motivated to appear friendly and either a high or low person could be cognitively overloaded. Wanting to appear friendly might make you smile more and being cognitively loaded might impair your accuracy in perceiving other people's feelings, but no clear prediction from verticality could be made without knowing how eager to appear friendly and how overloaded the high and low people are.

The point is not that nonverbal behavior has an unknown or unknowable relation to verticality—indeed, the remainder of this chapter will summarize what is known—but rather that there are reasons to expect complex and variable associations. Because most studies do not measure the psychological states that accompany or follow from verticality, or allow a strong inference as to what they are, it is hard to predict what nonverbal cues or what level of interpersonal accuracy to expect. And, because there could be much variation between persons in such states, verticality effects may wash out (e.g., some bosses may be punitive and some prosocial, even within the same organization) (Galinsky et al. 2006; Schmid Mast et al. 2009). Furthermore, as noted earlier, nonverbal correlates that exist for one definition of verticality may not hold for another (e.g., personality dominance versus rank in an organization). A continuing challenge to research in this area is to move from a general verticality concept to a closer look at the particularities of how it is defined, operationalized, and construed in a given situation.

The present chapter has three main parts. The first part is about people's beliefs (stereotypes) about the connection of verticality to nonverbal communication, people's inferences about verticality based on viewing or listening to excerpts of behavior, and people's embodied self-conceptions of verticality based on their own behavior (and the consequences thereof). The second part reviews how verticality (measured or manipulated) is associated with nonverbal behavior. And the third part takes on the topic of interpersonal accuracy—both the accurate perception of verticality and the relation of a person's verticality to his/her accuracy in perceiving other states and traits in others.

Beliefs and Inferences about How Verticality is Displayed Nonverbally

People quickly, automatically, and effortlessly make judgments of others' verticality (Oosterhof and Todorov 2008). When making judgments on this dimension, there is great consensus about who appears to have higher vertical position than whom. Research shows that people hold explicit and reportable beliefs (i.e., stereotypes) about the nonverbal signals of verticality and they apply these when judging others on this dimension.

Beliefs and Stereotypes about Verticality and Nonverbal Behavior

Carney et al. (2005) conducted two conceptually identical studies with undergraduate participants that gathered people's stereotypes about verticality differences for 70 nonverbal characteristics and behaviors. Participants were asked to predict the behavior and accuracy of imagined target persons who were high or low either in hierarchical rank in a work setting or in personality dominance. Participants had very clear and consistent beliefs about the nonverbal display of rank and personality, with significant effects occurring across both studies for 35 of the 70 behaviors. Both women and men were believed to express verticality approximately the same way and the beliefs about nonverbal expression did not generally depend on whether verticality was operationalized as hierarchical rank or personality dominance. Among other behaviors, high targets were believed to pay less attention to others (which implies less interpersonal accuracy), handshake more, stand closer, touch others more, have more expressive faces and overall animation, gesture more, gaze more, touch self less, have a more erect posture, lean forward more, and use more open body positions. Interestingly, smiling was not believed to be associated even though it has been theorized to be higher in low than high vertical people (Henley 1977). Thus, people do think verticality is associated with many nonverbal cues.

The Nonverbal Cues that Implicitly Shape Perception of Verticality

People also have beliefs about the nonverbal expression that may be utilized in an implicit way when judging others' verticality. That is, there is a set of nonverbal behaviors that tend to be present (or absent) when people perceive someone as being high or low on the vertical dimension—but it is unlikely people are explicitly aware of what those behaviors are. Here, we address behaviors *perceived* to be associated with verticality, based on the meta-analysis by Hall et al. (2005). (This meta-analysis was concerned only with nonverbal displays, not accuracy of interpersonal perception.) In this literature, perceivers rated target persons on the vertical dimension. Then, the nonverbal behaviors of the targets were measured by neutral coders. Those coded behaviors were then correlated with the perceivers' judgments to reveal the cues that predicted their judgments (e.g., Aguinis and Henle 2001; Burgoon and Le Poire 1999; Burgoon et al. 1985; Halberstadt and Saitta 1987; Hall and Friedman 1999).

Many nonverbal behaviors predicted higher ratings of verticality, a number of which converge with the explicit beliefs documented in Carney et al. (2005). Across both explicit and implicit beliefs, high vertical people (versus low vertical people) are thought to: touch themselves less, touch others more, use more arm and hand gestures, have closer interpersonal distances, be more expansive in their body positions and movements, interrupt more during speaking, have shorter time latencies before speaking, use more filled pauses (such as umm and ahh), be more expressive, gaze more overall, and have more postural relaxation. Smiling was also negatively related to the perception of verticality (with more smiling being associated with

lower ratings), but when the results for a large group of studies that all used the same facial stimuli were combined into an average effect size, this result disappeared, consistent with the explicit beliefs uncovered by Carney et al. (2005). Finally, there is a strong positive relation between speaking time and perceived high verticality (meta-analysis of Schmid Mast 2002).

The Embodied Nonverbal Display of Verticality

There is good evidence that engaging in behaviors activates neural circuitry consistent with those behaviors. Darwin (1965) proposed that facial expression can intensify the experience of emotion in his treatise on the expression of emotion in man and animals. While the existence of embodied cognition has been long known, and research on the bi-directional link between body and mind has been conducted for decades, the term embodiment emerged only recently.

Examples of feedback from the body to psychological states are now many. Wells and Petty (1980) showed that participants were more persuaded by verbal messages when induced to nod versus shake their heads laterally. Strack et al. (1988) showed that the unobtrusive contraction of the "smile muscle" (zygomaticus major) increased participants' ratings of the funniness of cartoons. Other work has shown that sitting in an upright posture induces pride (Stepper and Strack 1993), and hunched (versus upright) physical postures elicit more feelings of helplessness (Riskind and Gotay 1982).

In the context of the embodiment of verticality, fist clenching increased men's self-ratings on power-related traits (Schubert and Koole 2009). Also, approach-related behaviors (which are associated with verticality; Keltner et al. 2003) can be increased through touching and pulling (e.g., Briñol and Petty 2003; Chen and Bargh 1999; Wegner et al. 1994).

In a more direct test of the embodiment hypothesis in relation to verticality and nonverbal expression, Carney et al. (2010) manipulated postures to be expansive-open versus contractive-closed. Expansive-open postures were expected to activate feelings of high verticality and contractive-closed postures were expected to activate feelings of low verticality. Indeed, these postures were found to stimulate differences in feelings of being powerful and in charge, and changes in testosterone and cortisol. Moreover, the expansive-open postures even shaped risk-taking behavior. Overall, it seems that nonverbal displays of verticality cause mental and bodily changes consistent with the effect of verticality itself.

Subsequent work by Huang et al. (2011) showed that a pose manipulation was, in fact, even more impactful on approach-related behaviors than role-play and recall-prime manipulations. Additional work also showed that expansive (versus contractive) postures led to increases in pain tolerance (Bohns and Wiltermuth 2011). And current research is showing that expansive postures also lead to increases in stress resilience (Carney et al. 2014) and in job interview performance (Cuddy et al. 2014). In other words, the nonverbal display of power—acted unobtrusively—appears to impact many systems.

Conclusions and Future Directions Regarding Beliefs, Perceptions, and Embodiment

Explicit beliefs about verticality and nonverbal communication converge rather well with more implicitly measured associations—that is, perceptions of verticality based on viewing nonverbal cues. With regard to the embodiment of verticality, the "power pose" work only examined the expansiveness dimension and future research must explore whether other verticality-related behaviors such as speaking time (Schmid Mast 2002), interruptions, and the visual dominance ratio (Dovidio and Ellyson 1985) also may be able to produce feelings and subsequent behaviors consistent with verticality. Also, no experiment has systematically varied participants' awareness of the pose manipulation to determine if awareness that one is "doing a power pose" disrupts (or perhaps enhances) the phenomenon.

It is interesting that the nonverbal display of power in belief, perception, or embodiment overlaps considerably with nonverbal cues associated with pride, particularly with respect to expansive-open versus contractive-closed postures. Tracy and colleagues have shown that an expansive nonverbal display is associated with pride—even in the blind (Tracy and Matsumoto 2008). The displays are so close, in fact, that research has shown the pride display to activate mental concepts associated with verticality (Shariff and Tracy 2009; Shariff et al. 2012; Tracy et al. 2013). Pride, then, can trigger nonverbal displays that, in turn, influence others' perceptions along the verticality dimension and likely have feedback effects such as seen in the "power pose" research.

Nonverbal Behavior and Actual Verticality

Now we move to nonverbal behavior correlates of actual verticality—how nonverbal behavior differs, or not, between people who have different degrees of verticality. We focus on the meta-analysis of Hall et al. (2005) in which verticality was defined in terms of personality dominance, power roles or rank, and socioeconomic status (SES); both experimentally manipulated and preexisting verticality definitions were included. In this meta-analysis, the indicator of effect size was the Pearson correlation (r), signed so that positive values meant that higher vertical people displayed more of the behavior and negative values meant the reverse.

The significant effects (Table 15.1) showed that higher vertical people used more open body positions, had closer interpersonal distances to others, were more facially expressive, spoke more loudly, engaged in more successful interruptions, had less vocal variability compared with lower vertical people, and were better able to pose emotional expressions in the face and voice. The amount of time a person speaks during a social interaction is also a valid cue to a high position on the vertical dimension and is, indeed, a more consistent and strong cue than most of the cues mentioned above. Meta-analytic evidence shows that superiors talk more than their subordinates, people in high-power roles talk more than people in low-power roles, and the more a person is dominant as a personality trait, the more he or she talks during an interaction (Schmid Mast 2002).

Table 15.1 Nonverbal behaviors in relation to actual verticality. (From Hall et al. 2005)

Behavior	Number of studies	Mean effect size (r)
Significant effects		
Open position	8	0.13[*]
Interpersonal distance	11	−0.17[***]
Facial expressiveness	2	0.24[**]
Loudness	3	0.24[***]
Successful interruptions	13	0.22[***]
Vocal variability	1	−0.27[**]
Posed emotion encoding	4	0.31[***]
Nonsignificant effects		
Smiling	22	−0.03
Gazing	11	−0.01
Nodding	5	0.06
Self-touch	6	0.00
Other-touch	3	0.03
Hand/arm gestures	9	0.02
Relaxed posture	10	0.02
Back-channel[a]	5	0.03
Speech errors	4	0.02
Speech rate	3	−0.06
Pitch	2	−0.05

Note: Based on studies with reported or calculable effect sizes. Positive effect sizes mean that higher vertical people displayed more of the behavior and negative values mean the reverse

[a] Back-channel responses, also called listener responses, are brief acknowledgments such as "mm-hmm" made while another person has the speaking floor

* $p \le .05$

** $p \le .01$

*** $p \le .001$.

Importantly, for several of these behaviors there was significant heterogeneity, meaning that variation among the effect sizes was greater, often much greater, than expected by sampling variation. Efforts to uncover moderator effects were generally not successful.

Table 15.1 also shows that for a number of behaviors, including some for which there are believed and perceived verticality differences, there was no evidence of an actual verticality effect. Though the small number of studies for some behaviors prevented strong conclusions, the nonsignificant effects were very small in magnitude while often being significantly heterogeneous. For both smiling and gazing, for example, the average effects were negligible but there was extreme variation, with effects that were both positive and negative. Note, the lack of an overall smiling effect is consistent with the believed and perceived results described earlier and is contrary to earlier theorizing (Henley 1977). Although overall gaze showed no overall relation to verticality, the gaze pattern called the Visual Dominance Ratio (VDR) has a robust tradition of findings. The VDR is defined as the percentage of gaze at an interaction partner while speaking divided by the percentage of gaze while listening; a high VDR gives the impression of less conversational attentiveness (Dovidio

and Ellyson 1985). Research has clearly demonstrated that higher verticality is associated with a higher VDR for both men and women and for a variety of definitions, such as personal expertise on a topic (Dovidio et al. 1988), objectively measured rank (Exline et al. 1975), experimentally ascribed status (Ellyson et al. 1980), and personality dominance (Ellyson et al. 1980).

The example of the VDR demonstrates that an effect for the overall behavior—in this case, overall gazing—might be negligible while an effect for a more precisely defined and nuanced behavior pattern might be easily detectable as a correlate of verticality. Another such illustration, also for gazing, is for the "prolonged gaze pattern": Both emergent and appointed leaders in three-person groups chose the next speaker by engaging in prolonged gazing at that person as the leader nears the moment of yielding the floor (Kalma 1992). Both this and the VDR are likely strong, yet subtle, methods of nonverbal social influence related to verticality.

One important kind of moderator that the meta-analysis could not address was the salience of their vertical position to the people being observed. The relative verticality of two people may sometimes be the overriding dimension of relationship (the example of master and slave comes to mind), but sometimes there may be multiple dimensions or functions to an interpersonal relationship among which verticality is only one, and perhaps not the most important one in producing behavioral effects. For example, two best friends may differ greatly in social class or occupational prestige, yet these differences play little role in how they behave with each other; indeed, they may go to pains not to let this happen. With many studies in this literature being on college students, the verticality differences that existed (whether manipulated or naturally occurring) may have been not very salient or important and therefore might have exerted weak influences on nonverbal behavior. More studies of ecologically meaningful verticality, such as that of Dean et al. (1975) on interaction distances between men holding differing military ranks, are needed.

Several other important questions were not, or could not, be addressed in Hall et al.'s (2005) meta-analysis. The only effects summarized were main effects of the actor's verticality. Some studies in the literature have also found target effects, that is, people treat high and low vertical people differently. Curvilinear effects have also been found and these are, in fact, probably ubiquitous in life (highest or lowest levels of the behavior occurring in equal compared with unequal verticality interactions). Dean et al. (1975) found both such trends for interaction distance between military personnel of different ranks. Other limitations of the meta-analysis should be noted. One is that in actual interaction, it is likely that people reveal or display their high or low verticality in multiple behaviors simultaneously. Analyzing behaviors individually probably yields effects that are smaller than would be obtained if several behaviors were considered at once.

Also, many one-of-a-kind studies have been done. We already mentioned Kalma's (1992) study on the prolonged gaze pattern, and other examples include Gifford's (1994) finding that people higher in personality dominance engaged in less object manipulation, and Kraus and Keltner (2009)'s finding that a person higher in SES was more likely to disengage nonverbally during an interaction with

a person of lower SES (more self-grooming, object manipulation, doodling) and also to do less gazing, laughing, and nodding. The fact that Gifford's (1994) study on dominant personality and Kraus and Keltner's (2009) study on SES contradict each other on object manipulation highlights the difficulties in finding consistent patterns in this literature.

In another unique study, Kraus and Chen (2013) examined physical dominance in relation to smiling, finding that contenders in mixed martial arts contests were more likely to win if they did not smile in a posed photograph taken prior to the bout (posing in a fighting stance with their competitor). This could indicate that smiling leaked the losing fighter's feelings of weakness, nervousness, or reduced aggressive intentions, or it could indicate that not putting on an intimidating facial expression gives the opponent a psychological advantage. In this instance, as in many other studies, the causal paths and mediators are unclear.

Conclusions and Future Directions Regarding Nonverbal Behavior and Actual Verticality

Much more research is needed on how a person's vertical position is related to his/her nonverbal behavior. Much of the literature is correlational, meaning causal paths are often unclear. Mediating mechanisms are virtually unknown, meaning we cannot answer important questions such as *why* are higher vertical individuals more accurate in expressing emotions through nonverbal cues (Table 15.1). Also the inconsistency between results of studies demands focused research on moderating factors: Why do some studies find opposite results from other studies?

Verticality and Accuracy of Interpersonal Perception

For the remainder of the chapter, we focus on interpersonal accuracy, defined as the precision with which people infer or recall other people's states, traits, personal attributes, or behavior. We focus both on how accurate people are when inferring other people's vertical position ("who's the boss" in a social setting) and on how one's own vertical position influences the extent to which that individual is accurate when inferring and recalling other people's states or traits.

Accuracy of Perceiving Verticality

How accurate are people in judging "who's the boss" in social situations? Being able to judge others' verticality is an especially important skill, given its highly adaptive value. Knowing who the "boss" is makes it easier to communicate efficiently in

order to achieve one's goals (e.g., address those who have the resources). Such knowledge also helps maintain the existing social order. So if this skill is highly adaptive, are people good at it? As mentioned in a previous section, not all cues that people use to infer another's verticality are actually valid. Still, despite using some inaccurate cues, research shows that people can assess others' vertical position better than chance level and can, in fact, be quite accurate. For example, perceivers who looked at photographs of two university employees were better than chance at inferring the relative status of the two people in the picture (Schmid Mast and Hall 2004). Similarly, perceivers were able to identify accurately which of two target people was the boss based on photographs (Sternberg and Smith 1985).

Ratings of others' personality dominance may also be quite accurate. In one study, perceivers' ratings of chief executive officers' (CEOs) dominance based on their photographs significantly predicted the CEOs' companies' earnings (Rule and Ambady 2008). This result may be an indirect indicator of accuracy in judging dominance if the CEOs' dominance was responsible for the performance of the company. Recent evidence also suggests that dominance cues are processed similarly across different cultures (Bente et al. 2010; Rule et al. 2011), although verticality relations are more clearly displayed through nonverbal behavior in some countries (e.g., Germany) than others (e.g., United States, United Arab Emirates; Bente et al. 2010).

The ability to assess verticality in others seems to occur early in development (Antonakis and Dalgas 2009). Children were presented with pairs of photographs depicting real politicians involved in a past election. Their task was to decide which one of the two men they would choose as a captain of a boat in a computer-simulated game involving a boat trip. Children's decisions reliably predicted actual election results (i.e., which of the two candidates was actually elected) and were not significantly different in their accuracy compared with the decisions of adults. The ability to mentally represent social dominance and power can occur even in preverbal infants: As early as 10 months old, infants were able to use the relative size of nonhuman agents to mentally represent dominance and predict which agent would win in a contest (Thomsen et al. 2011).

Thus, people can be quite accurate overall in their verticality assessments, even though there are few specific nonverbal behaviors that are consistently indicative of actual verticality (see Table 15.1). Moreover, some nonverbal cues are perceived to be significantly related to verticality (e.g., smiling, other-touch), when in fact they are not related overall to actual verticality (Hall et al. 2005). This conundrum may be explained if we consider that it may not be single cues that predict accuracy, but rather a pattern or combination of different cues and the absence of others. In other words, assessing verticality may be a Gestalt-like impression formation process. For example, a nonverbal behavior pattern involving touching, pointing at the other, invading space, and standing over the other has been related to perceived dominance (Henley and Harmon 1985). Thus, people may be accurate not necessarily because they can judge individual cues accurately; instead, what matters is the manner in which they weigh the relevance of each nonverbal cue in the given context.

The Perceiver's Verticality and Accurate Perception

For decades, there has been an ongoing debate in the literature: Who is better at "reading" others? Are high vertical people more interpersonally accurate than low vertical people, or vice versa? More than 90 studies directly tested this research question (for a meta-analytic review, see Hall et al. in press). In these studies, people (perceivers) make inferences about others' (targets') states or traits, either in a controlled *testing paradigm* (in which participants infer people's states based on videos, photographs, or other recorded material) or, to a lesser extent, in the context of actual social interactions in which participants infer other people's states after actually interacting with them—the *in vivo paradigm*. Accuracy tests in the testing paradigm are scored against a "correct" criterion and can include established instruments such as the Profile of Nonverbal Sensitivity (PONS; Rosenthal et al. 1979) or the Diagnostic Analysis of Nonverbal Accuracy (DANVA; Nowicki and Duke 1994). In the *in vivo* paradigm, people are asked to make judgments about others during or following an interaction, with the criterion being the self-ratings made by the partner-target (e.g., the perceiver is asked how their interaction partner felt, and their answer is compared against the partner's self-ratings of his/her affective state).

For the most part, this research focused on how people make *inferences* about other people, particularly how people infer the affective states of others. A different type of accuracy that is measured in this literature is accuracy of *recalling information* about another person, such as the words that the target person said or wrote, or the person's nonverbal cues.

Individual studies have found support for both hypotheses: that low vertical people are more accurate than the high and that high vertical people are more accurate than the low. For the remainder of the chapter, we will describe these two opposing views and the empirical findings that support them, for both the testing paradigm and the *in vivo* paradigm. We additionally discuss possible moderators of this relationship, as well as the gaps and possible future directions in this line of research. The following section discusses studies in the testing paradigm and *in vivo* studies will be discussed in a later section. However, the theoretical arguments generally apply to both.

Low vertical people are more accurate than high vertical people One view is that low vertical people are more accurate than the high at perceiving others, primarily because it is adaptive for them to be accurate. For example, subordinates may be motivated to discern and learn their superiors' intentions, moods, and desires. By knowing these states, superiors may become more predictable, which would help subordinates to adjust their own behavior in order to achieve their desired goals. Thus, accurate interpersonal perception becomes an adaptive skill for those with a power disadvantage (Thomas et al. 1972; Henley 1977).

If low vertical people have an advantage in terms of accuracy, this effect may also be driven by the high vertical people being especially low in accuracy. Perhaps high vertical people do not need to be accurate, do not want to be accurate, or do not have the cognitive capacity to be accurate (Fiske 1993; Russell and Fiske

2010). Given that they do not depend on others and they control relevant resources, high vertical people may not be motivated to know subordinates' feelings, thoughts, or expectations. Alternatively, because of high cognitive demands that come with some high vertical positions, such people may not have the cognitive capacity to attend to the feelings and behaviors of others.

The hypothesis that high vertical people are less accurate than the low was supported in some studies, for different definitions of verticality: an experimental priming induction decreased the ability to recognize others' emotions (Galinsky et al. 2006), personality dominance was negatively correlated with emotion recognition (Moeller 2011), and high SES was associated with reduced empathic accuracy (Kraus et al. 2010). Low vertical people were also found to be more accurate in recalling information about others, such as who made a sexist remark in an online discussion (Barreto et al. 2010).

High vertical people are more accurate than low vertical people Still other studies found the opposite: High vertical people were more accurate. Such people may be motivated to know others because others depend on them and because otherwise they would lose the respect and support of their followers, as argued by Hall and Halberstadt (1997) and Hall et al. (1997). They need to be accurate in order to lead others who accorded them their position. This other-orientation of high vertical people was supported by Schmid Mast, Jonas, and Hall (2009), who found that for high vertical people, the positive effect on interpersonal accuracy was mediated by felt pride and felt respect.

Alternatively, rather than high verticality making people accurate, accuracy may produce high verticality—in other words, people who have this skill are better able to achieve those high positions. This view is especially prevalent in the organizational and leadership literature (Riggio 2001), where it is generally assumed that people become leaders in part because of this interpersonal skill.

From a cognitive perspective, high vertical people may be more accurate because they use a global rather than local processing style: They focus on the big picture (Schmid and Schmid Mast 2012), a strategy that can facilitate facial emotion recognition in certain circumstances (Schmid et al. 2011).

Finally, it could also be argued that low vertical people, for various reasons, are especially low in accuracy, and this drives the advantage that high vertical people have in terms of accuracy. Individuals low in verticality may be too demoralized or too cognitively loaded to be accurate. Although these mediators have not been studied directly, there is evidence that decreased motivation, negative affect, and high cognitive load can impair performance on interpersonal accuracy tasks (e.g., Ambady and Gray 2002; Horgan and Smith 2006; Phillips et al. 2007).

The hypothesis that the high vertical people are more accurate than the low is supported, for example, in the studies by Schmid Mast et al. (2009), and in the meta-analysis it was supported especially within two categories of this research: the relation of SES to the accuracy of making inferences and the effect of experimentally manipulated power on recall of interpersonal information, both in the testing paradigm. Higher SES was associated with higher accuracy in judging emotions

using vocal cues, but also cues from the face and the body (Pfaff 1954; Rosenthal et al. 1979; Stokes 1983; Alvarez and Fuentes 1994). Experimentally manipulated vertical position similarly showed a significantly positive effect on recall of information about other people, such that high vertical individuals remembered more of others' words compared with individuals assigned to low roles (Overbeck and Park 2001; Saenz and Lord 1989).

It all depends: Effects of moderators It can also be argued, as suggested earlier in this chapter, that it is unlikely that the relation between verticality and accuracy is consistent across situations. Instead, high vertical people might or might not be interpersonally accurate compared with low vertical people, depending on other factors. Indeed, the meta-analysis showed great heterogeneity across studies in the verticality-accuracy relationship and type of personality dominance (prosocial/responsible versus egoistic/aggressive) was a significant moderator. Different moderator variables may influence the direction of this relationship: goals (prosocial versus egoistic, helpful versus punitive), different types of interpersonal accuracy (e.g., lie detection, personality assessment, inference about status), emotional states (positive versus negative), cognitive load, or motivation (Galinsky et al. 2006; Hall et al. 2001; Kraus et al. 2010; Russell and Fiske 2010; Schmid Mast et al. 2009).

Despite moderators being suggested by a number of authors, there have not been many deliberate tests of this hypothesis. One exception comes from Schmid Mast et al. (2009), who directly tested moderators by experimentally manipulating empathic versus egoistic mindset for high vertical participants. Findings showed that empathic orientation led to higher accuracy of decoding nonverbal affective cues compared with egoistic orientation.

Verticality and accuracy in the *in vivo* paradigm Studies have also investigated this relationship in the context of social interactions (*in vivo*). A number of these studies suggest that there is a tendency for low vertical individuals to be more accurate than high vertical individuals (e.g., Delgado-Hachey and Miller 1993; Kraus et al. 2010; Letzring 2008). However, these findings should be interpreted with caution, given a methodological issue that has profound implications. Accurate perception of another individual depends not only on how accurate the perceiver is but also on how expressive the target person is—whether the cues from the target are clear and recognizable. If targets do not express their feelings, attitudes, or opinions, this has a negative effect on the accuracy of the perceiver in decoding those states. Conversely, if targets are "an open book"—they clearly express their emotions and attitudes—perceivers are more likely to be accurate too. Therefore, in the *in vivo* tradition, accuracy is typically fully confounded between the perceiver's perceptivity and the partner-target's expressivity, as pointed out by a number of previous authors (Alkire et al. 1968; Hall et al. 2006; Noller 1980; Snodgrass et al. 1998).

Only three studies (Alkire et al. 1968; Snodgrass et al. 1998; Hall et al. 2006) fully addressed the issue of this confound, by measuring the expressivity or communication clarity of the targets' message using independent raters who performed the same judgment task as the original perceiver member of the dyad did. For example,

Alkire et al. (1968) had college sorority members and pledges (those wishing to join) participate in a dyadic task in which they had to describe the shapes of figures to the partner without the partner seeing the figures. Initial results showed that sorority members were more accurate in perceiving the message coming from the pledges than vice versa. Independent participants were asked to listen to the audiotapes of these interactions and to perform the same accuracy task as the actual participants of the study. Data from these independent listeners showed that the sorority members were less clear in communicating their messages. In the light of this finding, the authors concluded that the lower accuracy of the pledges might not be due to their being lower in vertical position, but rather to the decreased clarity of the message. Similarly, in Snodgrass et al. (1998) and Hall et al. (2006), correcting for the target's expressivity revealed that perceivers' accuracy was accounted for by the expressive clarity of the partners.

The remaining studies in the *in vivo* tradition either did not control for expressive clarity or did not do so in an ideal manner (Gonzaga et al. 2008; Kraus et al. 2010). For example, in Kraus et al., the authors measured and controlled for the overall expressiveness of the target person who emitted the message and not for the clarity of the actual message that was decoded. Because of this methodological issue, it is difficult to draw definite conclusions about the verticality-accuracy relationship based on studies that used the *in vivo* paradigm. Future research should correctly control for the clarity of the targets' communication in order to obtain an unbiased measure of how the verticality of perceivers is related to their accuracy in decoding those messages.

Conclusions and Future Directions Regarding Accuracy

The existing literature reveals that there is no clear overall advantage for higher or lower vertical individuals to be generally more accurate, but rather that whether this will be the case depends on what definitions of verticality and accuracy are used. And when meta-analytic trends or individual studies are significant, there is still little known about what mediating mechanisms might be accounting for the effects. Though it might be disappointing that sweeping conclusions are not possible, finding a complicated picture should not be such a surprise considering how many operational definitions of the verticality concept there are and the very different psychological states that might be caused by, or accompany, them. Identifying the factors that moderate verticality-accuracy relations should be a major goal for research. One additional problem is that we do not know where the locus of this effect is—if high people have an advantage, is it because they are more accurate or because low people are less accurate? Similarly, if low vertical people have an advantage, is it because high people are less accurate or low people are more accurate? One way to address this issue is to compare high individuals not only with low individuals (as is almost always done in the literature), but also with a condition of

neutral verticality or some other kind of control condition. In one of the only studies that addressed this issue, the accuracy of people assigned to a neutral-vertical condition was closer to the level of accuracy of low vertical people, suggesting that it is high vertical position that increased accuracy of emotion recognition rather than low position decreasing it (Schmid Mast et al. 2009). However, more evidence is needed to investigate the locus of the effect.

Given that the current findings are not homogeneous, it is not surprising that researchers have not focused on mediators—an effect usually needs to be firmly established before investigating its mechanism. Future studies should, however, directly test the meditational variables that have been suggested as mechanisms: motivation, emotion, cognitive load, cognitive capacity, processing style, etc.

Finally, future studies should consider investigating accuracy in perceiving other content besides affect, which was the content of the accuracy measurements in the vast majority of available studies. Other possibilities may include accuracy in inferring targets' personality traits, attitudes and opinions, intelligence level, or interpersonal relationships. The literature offers little theoretical justification for why judging emotions is chosen almost universally as the content of accuracy judgments.

Closing

Across humans and other animals, high vertical position means advantaged and extended survival. Because our very survival depends greatly on having some power (or one of its variants, e.g., status, reputation, class, prestige, etc.) or knowing who does, humans think about power a lot, practice having it, nonverbally signal it, try to figure out who has it, and try to discern what both the high and the low are feeling and thinking. A puzzle yet unsolved about the nonverbal communication of verticality is why it is people can accurately detect who has it and who does not, yet there are few nonverbal behaviors that are consistently indicative of verticality in humans. One possible answer is that there are many ways to show one's vertical position but instead of being universal cues, some are much more relevant in certain contexts. Also, several weak cues can be a potent signal if they combine. And, of course, research has not yet measured all the possibly relevant behaviors, especially not all at once. Nonverbal measurement is laborious, meaning that a researcher might unknowingly not measure the nonverbal cue that would be especially diagnostic in a given context.

Another unsolved puzzle concerns the link between a perceiver's vertical position and his/her accuracy. There is great inconsistency in this literature. It would be good to know which features of the situation, judgment, or process (or all three) are influencing a person's ability to accurately judge the traits, states, goals, and intentions of others.

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Part V
Methodology

Chapter 16
The Assessment of Social Status: A Review of Measures and Experimental Manipulations

Joey T. Cheng, Aaron C. Weidman and Jessica L. Tracy

In this chapter, we provide an overview of measures and experimental methods available for assessing and manipulating social status. Numerous measures and manipulations have been used in the fairly vast literature on social status, so we focus our review on a diverse set of methodologies that were systematically developed and well validated. In addition, in keeping with the volume's focus on social rank differences that arise spontaneously in social interactions, we exclude methodologies aimed at measuring or manipulating institutionally endowed differences in power, which refers to asymmetric control over resources between, for example, a boss and a subordinate. Institutionally endowed power is a related but distinct concept from naturally emerging social rank (see Blader and Chen, Chap. 4, this volume; Magee and Galinsky 2008), and a variety of power measures and manipulations exist (see Smith et al. 2008) but are beyond the scope of this review. Subsequently, we first summarize available self-reports, peer-reports, and behavioral measures of status; then we review experimental methods that have been used to effectively manipulate status.

Measures of Social Status

In this section, we provide an overview of the most widely used and well-validated measures of social status. These measures can be organized into self-report or peer-report rating scales and behavioral measures, and are discussed in that order, and are listed alphabetically by the lead author's last name. For each measure, we provide information regarding (a) the original source article detailing the measure's development; (b) our interpretation of the broader, underlying rank-related concept

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that the measure assesses; (c) a brief description of the measure; (d) sample items (for self- and peer-rating instruments only); (e) psychometric information about reliability and validity (i.e., convergent and discriminant validity, generalizability) where available (though it should be cautioned that this information reflects characteristics of the measure when administered to the particular sample reported on); (f) information about frequency of use, as indicated by the number of citations the article has received (an index that overestimates the measure's frequency of use, given that these articles are often cited for substantive and other reasons as well); and (g) a sample recent article that has used this measure to investigate topics related to social rank and, in doing so, has offered further information about its nomological network and the underlying rank construct.

Self- and Other-Report Scales

1. The Personal Sense of Power Scale (Self-Report)

Originally developed in:

Anderson, C., John, O. P., & Keltner, D. (2012b). The personal sense of power. *Journal of Personality*, *80*, 313–344. (Includes full scale)

Broader concept assessed: Social rank and influence.

Scale description: A set of eight items were developed to assess individuals' beliefs about their ability to make decisions; influence others' behavior, opinions, and beliefs; and to satisfy their own wishes and desires within social relationships. Participants rate the extent to which they agree with a series of self-statements on a seven-point scale (1 = "disagree strongly"; 7 = "agree strongly").

Sample items: "I can get him/her/them to listen to what I say", "If I want to, I get to make the decisions."

Reliability: Scale showed good internal consistency (αs = 0.76–0.91), and ratings were moderately consistent across different relationships (e.g., family member, teaching assistant, close friend; rs = 0.03–0.47, M = 0.23).

Convergent validity: Scale showed good convergent validity with measures of related constructs (e.g., dominance, rs = 0.28–0.59; peer-rated sociometric status, rs = 0.33–0.37; extraversion, r = 0.48; and narcissism, r = 0.46).

Generalizability: Scale was developed with undergraduates from North American universities.

Additional information about scale development: Authors began scale development with a large initial item pool drawn primarily from an extensive theoretical review (Keltner et al. 2003).

Frequency of use: The original article has been cited 27 times since its publication in 2012.

Sample of other research that used this scale:

Joshi, P. D., & Fast, N. D. (2013). Power and reduced temporal discounting. *Psychological Science*, *24*, 432–438.

(The scale was used to assess participants' sense of power in their workplace.)

2. Desire for Dominance (Self-Report)

Originally developed in:

Cassidy, C., & Lynn, R. (1989). A multifactorial approach to achievement motivation: The development of a comprehensive measure. *Journal of Occupational Psychology*, *62*, 301–312. (Includes full scale)

Broader concept assessed: The desire to achieve social rank and influence.

Scale description: A subscale consisting of seven items from the Achievement Motivation Scale (developed in the same paper) was developed to assess the desire to lead or to be in a position of dominance. Participants rate their endorsement of several preferences and behavioral tendencies on a three-point scale (0 = "No"; 2 = "Yes"; midpoint scale value not given).

Sample items: "I think I would enjoy having authority over other people," "When a group I belong to plans an activity, I would rather direct it myself than just help out and have someone else organize it."

Reliability: Scale showed good internal consistency (αs = 0.73–0.81) and split-half reliability (rs = 0.70–0.81).

Convergent validity: Scale showed good convergent validity with measures of status aspiration and competitiveness (rs = 0.18–0.93, M = 0.46).

Generalizability: Scale was developed with undergraduates from North American universities and adults from the general population.

Additional information about scale development: Authors began scale development with a large initial item pool drawn from a number of existing measures used to assess a variety of motivations. Exploratory factor analysis was used to arrive at the final scale items.

Frequency of use: The original article has been cited 188 times since its publication in 1989.

Sample of other research that used this scale:

Mead, N. L., & Maner, J. K. (2012). On keeping your enemies close:Powerful leaders seek proximity to ingroup power threats. *Journal of Personality and Social Psychology*, *102*, 576–591.

(The scale was used to assess individual differences in the desire for status and rank.)

3. Need for Dominance in the Workplace (Self- and Other-Report)

Originally developed in:

Steers, R. M., & Braunstein, D. N. (1976). A behaviorally based measure of manifest needs in work settings. *Journal of Vocational Behavior*, *9*, 251–266. (Includes full scale)

Broader concept assessed: The desire to achieve social rank and influence.

Scale description: A subscale consisting of five items from the Manifest Needs Questionnaire was developed to assess dominant and leadership behaviors in the workplace. Individuals rate the frequency with which they (self-report) or students in their classes (peer report) engage in certain behaviors, using a seven-point scale (1 = "never"; 7 = "always").

Sample items. "I seek an active role in the leadership of a group," "I strive to gain more control over the events around me at work."

Reliability: Self-reports showed good test–retest ($r=0.86$) and internal consistency reliability ($\alpha=0.82$). Peer reports elicited high interjudge agreement (αs$=0.74$–0.85).

Convergent validity: Self-reports and peer reports showed good convergent validity (rs$=0.49$–0.74). Self-reports also showed good convergent validity with self-reported Need for Dominance taken from other existing scales (e.g., the Personality Research Form; Jackson 1967; $r=0.62$), self-reported preferred work preferences (e.g., being a group leader, playing major role in determining group performance; rs$=0.39$–0.47), and peer ratings of various aspects of leadership ability (e.g., control, self-confidence, persuasiveness; rs$=0.29$–0.32).

Generalizability: Scale was developed with samples of graduate students from North American universities and middle-aged North American adults.

Additional information about scale development: Authors selected items based on previously developed taxonomies of human needs (Murray 1938).

Frequency of use: The original article has been cited 402 times since its publication in 1976.

Sample of other research that used this scale:

O'Reilly, C. A., & Caldwell, D. F. (1979). Informational influence as a determinant of perceived task characteristics and job satisfaction. *Journal of Applied Psychology*, *64*, 157–165.

(The scale was used to assess participants' aspiration for social rank; authors included it as a covariate in their main analyses.)

4. Perceived Social Status Scale (Self-Report and Other-Report)

Originally developed in:

Anderson, C., John, O. P., Keltner, D., & Kring, A. M. (2001). Who attains social status? The effect of personality and physical attractiveness in social groups. *Journal of Personality and Social Psychology*, *81*, 116–132. (Includes full scale)

Broader concept assessed: Social rank and influence based on earned respect and admiration.

Scale description: A set of three related measures were used to assess social status (defined as the amount of respect, influence, and prominence each member enjoys in the eyes of the others), all of which were administered by asking individuals to rate members of their social group on the amount of status, influence, and prominence—or on a subset of these—that the group member has obtained. Rating scales and end points varied across measures.

Items: Scale #1: "status," "influence," and "prominence in the [group]" (study 2); Scale #2: "prominence" (study 1); and Scale #3: "the amount of prominence, respect, and influence" (study 3).

Reliability: Scale #1 showed good internal consistency ($\alpha=0.98$), high interitem correlations (mean $r=0.93$), and high interjudge reliability (αs$=0.90$–0.97 for each item); Scale #2 showed high interjudge reliability ($\alpha=0.92$); Scale #3 showed high interjudge reliability (mean αs$=0.81$) and strong test–retest reliability (i.e., long-term stability over 4–5 months; rs$=0.61$–0.86).

Convergent validity: Scale #2 was shown to be strongly predictive of one's position(s) and office(s) in their fraternity ($r=0.56$). Peer ratings on Scale #3 were strongly correlated with the target individual's self-ratings on the same scale ($rs=0.58$–0.62). Self-reports from all three scales showed good convergent validity with self-reported extraversion ($rs=0.36$–0.48).

Generalizability: Scale #1 was developed with undergraduate all-female sorority groups; Scale #2 was developed with undergraduate all-male fraternity groups; and Scale #3 was developed with mixed-gender dormitory groups. All three samples were drawn from North American universities.

Frequency of use: The original article has been cited 327 times since its publication in 2001.

Sample of other research that used this scale:

Pettit, N. C., Yong, K., & Spataro, S. E. (2010). Holding your place: Reactions to the prospect of status gains and losses. *Journal of Experimental Social Psychology, 46*, 396–401.

(The scale was adapted to assess the extent to which participants value gaining others' respect and admiration, following an experimental manipulation.)

5. Dominance and Prestige Scales (Self- and Other-Report)

Originally developed in:

Cheng, J. T., Tracy, J. L., & Henrich, J. (2010). Pride, personality, and the evolutionary foundations of human social status. *Evolution and Human Behavior*, *31*, 334–347. (full scale included)

Broader concepts assessed: Social rank and influence based on force and intimidation (dominance), and earned respect and admiration (prestige).

Scale description: A set of items were developed to assess two dimensions of social rank: dominance (i.e., the induction of fear and intimidation; eight items) and prestige (i.e., the attainment of respect and admiration; nine items). Participants indicate the extent to which each statement describes themselves (for self-rating version) or a target individual (for peer-rating version) on a seven-point scale (1="Not at all"; 7="Very much").

Sample items: "Some people are afraid of me" (dominance); "Members of my peer group respect and admire me" (prestige)

Reliability: Scales showed good internal consistency ($αs=0.83$–0.88 and 0.80–0.85 for dominance and prestige, respectively,), and peer reports elicited high interjudge agreement ($αs=0.78$ and 0.84 for dominance and prestige, respectively).

Convergent validity: Self- and peer reports were shown to have good convergent validity with measures of a range of similar constructs. Dominance was shown to correlate positively with narcissism ($rs=0.22$–0.56), aggression ($rs=0.35$–0.55), agency ($r=0.46$), and peer-rated leadership ($r=0.40$). Prestige was shown to correlate positively with social acceptance ($rs=0.29$–0.59), agency ($r=0.39$), peer-rated advice-giving ability ($r=0.56$), and peer-rated leadership ($r=0.73$).

Discriminant validity: Self- and peer reports were shown to have good divergent validity with measures of theoretically divergent constructs. For example, dominance was shown to correlate negatively with agreeableness ($rs=-0.39$

to −0.61). Prestige was shown to correlate negatively or have no relation with aggression (rs=−0.38 to 0.03).

Generalizability: Scales were developed with samples of undergraduates and varsity athletes from North American universities.

Additional information about scale development: Authors began scale development with a large initial item pool drawn primarily from a theoretical model of dominance and prestige (Henrich and Gil-White 2001). Exploratory factor analysis and confirmatory factor analysis were used to arrive at final scale items and to derive the two-factor structure.

Frequency of use: The original article has been cited 57 times since its publication in 2010.

Sample of other research that used this scale:

Cheng, J. T., Tracy, J. L., Foulsham, T., Kingstone, A., & Henrich, J. (2013). Two ways to the top: Evidence that dominance and prestige are distinct yet viable avenues to social rank and influence. *Journal of Personality and Social Psychology*, *104*, 103–125.

(The scale was used to assess group member-perceived dominance and prestige following a group interaction.)

6. Agency Subscale of the Revised Interpersonal Adjective Scales (Self- and Other-Report)

Originally developed in:

Wiggins, J. S., Trapnell, P., & Phillips, N. (1988). Psychometric and geometric characteristics of the Revised Interpersonal Adjective Scales (IAS-R). *Multivariate Behavioral Research*, *23*, 517–530. (Includes full scale)

Broader concept assessed: Social rank and influence.

Scale description: A set of eight items was developed to assess personality characteristics related to agency (i.e., control and assertiveness). Participants rate the self-descriptive accuracy of personality adjectives on an eight-point scale (1="extremely inaccurate"; 8="extremely accurate").

Sample items: "self-assured"; "dominant"; "forceful"

Reliability: Scale showed good internal consistency (αs=0.79–0.88 across nine subsamples).

Convergent validity: Scale was shown to have good convergent validity with scales comprising closely related personality adjectives on the interpersonal circumplex (e.g., arrogant-calculating; gregarious-extroverted). Although specific correlations were not reported, these results were based on indices of spatial proximity—indicating similarity between constructs—between the agency scale and these related constructs within the circumplex space.

Discriminant validity: Scale was shown to have good discriminant validity with scales comprising divergent personality adjectives on the interpersonal circumplex (e.g., unassured-submissive; aloof-introverted). The spatial distances between the agency scale and these constructs within the circumplex space were high, indicating divergence.

Generalizability: Scale was developed with undergraduates from North American universities.

Additional information about scale development: Authors began scale development with a large initial item pool drawn from a comprehensive taxonomy of personality adjectives, which formed the basis for a previously validated version of the scale (Wiggins 1979). Principal components analysis was used to arrive at the final scale items and the interpersonal circumplex structure. The scale factor structure and reliability were replicated across nine subsamples.

Frequency of use: The original article has been cited 394 times since its publication in 1988.

Sample of other research that used this scale:

Anderson, C., Brion, S., Moore, D. A., & Kennedy, J. A. (2012a). A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology*, *103*, 718–735.

(The scale was used to assess trait dominance; it was included as a covariate in main analyses.)

7. Resource Control Ability in Children (Teacher-Report)

Originally developed in:

Hawley, P. H., Johnson, S. E., Mize, J. A., McNamara, K. A. (2007). Physical attractiveness in preschoolers: Relationships with power, status, aggression, and social skills. *Journal of School Psychology*, *45*, 499–521.

Broader concept assessed: Social rank and influence in children.

Scale description: A set of six items was developed to assess children's resource control effectiveness in school settings. Teachers rated the extent to which several statements accurately characterized children in their classroom on a seven-point scale (scale end points and labels not provided).

Sample items: "This child usually gets first access to preferred toys when with peers," "This child usually plays with the favored toys when with peers."

Reliability: Scale showed good internal consistency ($\alpha = 0.91$).

Convergent validity: Scale was shown to have good convergent validity with measures of similar constructs (e.g., teacher-rated ranking of students' dominance, $r = 0.62$, and teacher-rated aggression and assertion, rs $= 0.60$–0.76).

Generalizability: Scale was developed with North American preschool children.

Frequency of use: The original article has been cited 29 times since its publication in 2007.

Other sample research that used this scale:

Olthof, T., Goossens, F. A., Vermande, M. M., Aleva, E. A., & van der Meulen, M. (2011). Bullying as a strategic behavior: Relations with desired and acquired dominance in the peer group. *Journal of School Psychology*, *49*, 339–359.

(The scale was adapted to assess peer-reported, teacher-reported, and self-reported resource control among children.)

Behavioral Measures

1. Decision-Making Impact in a Survival Task (Lost on the Moon Exercise)

Originally developed in:

Bottger, P. C. (1984). Expertise and air time as bases of actual and perceived influence in problem-solving groups. *Journal of Applied Psychology*, *69*, 214–221.

Broader concept assessed: Social influence.

Measure description: Participants work collaboratively in small groups on the National Aeronautics and Space Administration (NASA)-developed moon survival exercise, a widely used task for eliciting and observing small groups' interactions. The task requires individuals to imagine having crash landed on the moon, with only 15 pieces of equipment available. Individuals are asked to rank order the items in terms of their utility for bringing the crew to safety. Participants initially complete this task on their own, then solve the problem again collaboratively. Interpersonal influence is quantified as the degree of similarity between each individual's response and the group's collective decision, with convergence indicating greater influence.

Generalizability: This measure of social influence was developed with undergraduate students from North American universities.

Frequency of use: The original article that detailed this methodology has been cited 105 times since its publication in 1984.

Other sample research that used this measure:

Cheng, J. T., Tracy, J. L., Foulsham, T., Kingstone, A., & Henrich, J. (2013). Two ways to the top: Evidence that dominance and prestige are distinct yet viable avenues to social rank and influence. Journal of Personality and Social Psychology, 104, 103–125.

The measure was used to assess participants' influence over other group members in a leaderless group task.

2. Visual Attention Received

As used in:

Cheng, J. T., Tracy, J. L., Foulsham, T., Kingstone, A., & Henrich, J. (2013). Two ways to the top: Evidence that dominance and prestige are distinct yet viable avenues to social rank and influence. *Journal of Personality and Social Psychology*, *104*, 103–125.

Broader concept assessed: Social rank, under the assumption that higher-ranked group members receive greater social attention.

Measure description: Observers' eye gaze is tracked using an eye-tracking device while they view a video recording of a social interaction among several targets; the visual attention received by each target is assessed. Rank is quantified as the total duration of visual attention received by each target, averaged across observers.

Convergent validity: This measure showed good convergent validity with measures of perceived influence, dominance, and prestige.

Discriminant validity: Likeability, which is theoretically distinct and perhaps even independent from social rank (Wiggins and Trapnell 1996), was found to be unrelated to the amount of visual attention received.

Generalizability: This measure was developed with undergraduate students from North American universities.

Frequency of use: The original article that detailed this methodology has been cited 15 times since its publication in 2013.

Other sample research that used a similar methodology:

Maner, J. K., DeWall, C. N., & Gailliot, M. T. (2008). Selective attention to signs of success: Social dominance and early stage interpersonal perception. *Personality and Social Psychology Bulletin*, *34*, 488–501.

(The measure was used to assess the extent of attention paid to targets who display signs of prestige.)

3. Interpersonal Influence in a Pattern Recognition Task

Originally developed in:

Moore, Jr. J. C. (1968). Status and influence in small group interactions. *Sociometry*, *31*, 47–63.

Broader concept assessed: Social rank and influence based on respect and admiration.

Measure description: A pair of participants collaborate virtually in a "contrast-sensitivity task," in which they independently decide which of two checkerboard images contains more white area. After providing their own answer, participants are shown their partner's answer and given the opportunity to change their response accordingly. Influence is quantified as the proportion of trials in which a participant changes the participant's response to that of participant's partner, out of the total trials in which the two disagree. Because participants know that their partners will not be informed of their decision, participants' tendency to change their responses indicates persuasion and thus influence based on respect, rather than conformity, or influence based on dominance/intimidation.

Generalizability: This measure of was developed among undergraduate students from North American universities.

Frequency of use: The original article that detailed this methodology has been cited 153 times since its publication in 1968.

Other sample research that used this measure:

Willer, R. (2009). Groups reward individual sacrifice: The status solution to the collective action problem. *American Sociological Review*, *74*, 23–43.

(The measure was used to assess interpersonal influence conferred to one's partner following an experimental manipulation.)

Experimental Manipulations of Social Status

In the remainder of this chapter, we provide a brief overview of experimental methodologies that have been developed and used to manipulate status. These methodologies can be organized under five broad classes: (a) manipulations based on thinking or writing exercises, (b) vignette or narrative manipulations, and manipulations based on altering, (c) dress cues, (d) size cues, and (e) social dynamics

between individuals. These include manipulations that vary the status of the participant and those that vary the perceived status of a target individual (as seen from the participant's perspective). For each experimental manipulation, we provide (a) information on the original published article in which it was used; (b) a description of the manipulation; (c) results of any manipulation check; and (d) information about frequency of use, in the form of number of citations received by the article (note that, as in the case for measures, this indicator overestimates the frequency at which the manipulation has been used).

1. Thinking or Writing Exercises

A number of experimental manipulations in the form of thinking or writing exercises have been designed to elicit momentary feelings of, or desire for, high (or low) social status among participants.

For example, in Anderson, Kraus, Galinsky, and Keltner (2012c, study 3), participants were asked to compare themselves with someone who had either high or low status, defined as respect, admiration, and influence. Participants were instructed to think about the similarities and differences between themselves and the comparison target in an imagined getting-acquainted social interaction. A manipulation check suggested that the high-status prompt elicited higher self-reported social standing vis-à-vis others (Cohen's $d = 0.54$). This article has been cited 18 times since its publication in 2012.

Tiedens, Unzueta, and Young (2007, studies 5 and 6) employed a similar exercise. Here, participants assigned to the high-status condition were asked to write about instances from their lives in which they felt self-confident and acted in an assertive and directive manner. In contrast, participants assigned to the low-status condition described instances in which they felt timid and followed directions from others. A manipulation check showed that participants who recalled behaving in more assertive ways rated themselves as more dominant and self-assured, in comparison to participants who recalled behaving in more submissive ways (ds $= 0.40$ and 0.29). This article has been cited 62 times since its publication in 2007.

2. Vignettes or Narratives

Studies have manipulated the status of participants or a target (or targets) using vignettes or narratives detailing their demeanor, personality, or behavior in terms of influence, assertiveness, dominance, or respect.

For example, in Griskevicius, Tybur, Gangestad, Perea, Shapiro, and Kenrick (2009), participants' motivation to seek social rank was manipulated with a short story prime describing a protagonist who recently graduated from college working at his/her first high-status job and aspiring to move up the company's social hierarchy. A manipulation check indicated that this prompt elicited an increased momentary desire for status and competition ($d = 2.40$). The original article in which this manipulation was developed has been cited 93 times since its publication in 2009.

To vary a target's social rank based primarily on perceived force and threat, Sadalla, Kenrick, and Vershure (1987, studies 2, 3, and 4) described the high-status target in a vignette as a strong, forceful, powerful, and competitive individual in

athletic or social contexts. In contrast, the low-status target was described as sub-missive, timid, deferential, and noncompetitive. A manipulation check showed that the target described as strong and forceful was rated as more socially dominant than the target described as yielding and submissive ($ds = 1.48$–4.64). This article has been cited 295 times since its publication in 1987.

Building on this initial work, Snyder, Kirkpatrick, and Barrett (2008, study 2) developed vignettes that manipulated a target's rank based on respect and admira-tion; the high-status target was described as a prominent, respectable, confident, relaxed, and nonforceful individual. This article has been cited 30 times since its publication in 2008.

3. Altering Dress Cues

Numerous studies have experimentally manipulated the status of target individuals (primarily based upon respect and admiration) by varying their dress.

For example, high-status targets—depicted either in person (Fortenberry et al. 1978) or in photographs (Maner et al. 2008)—were portrayed wearing professional business suits. Conversely, low-status targets were shown as dressed in casual at-tire. Manipulation checks showed that participants display increased deferential behavior toward targets dressed in professional attire (Fortenberry et al. 1978) and rate them as higher in social status ($d = 2.85$; Maner et al. 2008), compared to those dressed in casual attire. These articles have been cited 17 times and 44 times, respectively, since their publication in 1978 and 2008.

Similarly, in Ratcliff, Hugenberg, Shriver, and Bernstein (2011, study 2), high-status targets were portrayed wearing uniforms that convey high-status occupations (e.g., doctor, judge, four-star general). In contrast, low-status targets wore uniforms that convey low-status occupations (e.g., fry, cook, mechanic). A manipulation check showed that targets wearing prestigious uniforms were rated as higher in "status" relative to targets wearing less prestigious uniforms ($d = 6.84$). This article has been cited 19 times since its publication in 2011.

In Shariff, Tracy, and Markusoff (2012, study 3), participants were shown im-ages of two identical twins, one wearing a business suit and the other wearing dirty rags and blankets. Accompanying textual passages explained that one twin worked in finance and the other was homeless. A manipulation check showed that the well-dressed twin was rated as higher in status (defined in terms of high rank) than the rags-wearing twin ($d = 3.17$). This article has been cited two times since its publication in 2011.

4. Alteration of Size Cues

A large number of studies have manipulated the social status of either a target indi-vidual or the participant by varying their posture (expansive and open vs. contractive and closed) and apparent size (big vs. small).

For example, Sadalla et al. (1987, study 1) manipulated the status of a target individual (i.e., an actor) in a video recording by depicting him in a relaxed and asymmetrical posture while leaning back in a chair, in sharp contrast to a low-status target who appeared tense, constricted, and leaned forward while interacting with

another person. A manipulation check showed that the target who displayed a more relaxed and expansive nonverbal posture was rated as more socially dominant, compared to the target who displayed more tense and constrictive nonverbal behavior ($d=4.64$). This article has been cited 295 times since its publication in 1987.

Tiedens and Fragale (2003) manipulated the perceived status of a confederate who interacted face to face with participants in a similar fashion. The high-status confederate assumed more space with both the upper and lower body when seated, with one arm over the back of the chair and one leg crossed expansively. In contrast, the low status confederate sat in a constricted position, with legs together, hands in the lap, and a slouched upper body. A manipulation check revealed that the expansive confederate was rated by participants as more socially dominant than the constrictive confederate ($d=0.80$). This article has been cited 319 times since its publication in 2003.

As an example of research that utilized differential physical size to convey target status, Thomsen, Frankenhuis, Ingold-Smith, and Carey (2011) showed infants two agents represented by two blocks of different sizes, each with an eye and a mouth. The larger agent was used to portray a high-status target and the smaller agent a low-status target. Results suggested that infants mentally represent relative size as a status cue. They demonstrated an expectation (as indicated by looking time) for the smaller sized agent to show greater deference to the larger-sized agent but not vice versa (ds$=0.64$–0.90). This article has been cited 43 times since its publication in 2011.

Similar manipulations have been used to vary the status of research participants. For example, in Carney, Cuddy, and Yap (2010), participants' body posture was manually configured by experimenters into either a high-status pose entailing open limbs and spatial expansion or a low-status pose entailing closed limbs and spatial constriction. A manipulation check confirmed that participants who posed expansively reported feeling more powerful and in charge than those who adopted a contractive and closed posture ($d=0.91$). This article has been cited 125 times since its publication in 2010. Using a similar posture manipulation, Li Huang, Galinsky, Gruenfeld, and Guillory (2011) showed that expansive postures activate not only a heightened subjective sense of power ($d=0.48$) but also greater implicit power ($d=0.60$). Moreover, Bohns and Wiltermuth (2012) adapted this manipulation to vary the status both of research participants (study 1) and of a confederate (study 2).

5. ltering the Social Dynamics Between Individuals

Finally, diverse experimental manipulations have been designed to systematically manipulate the social status of participants or target individuals by varying the perceived social dynamics between the participant and other group members, or between target individuals and their peers.

For example, Fast, Halevy, and Galinsky (2012) manipulated the status of participants by telling them that they had been virtually paired with a partner to work on a collaborative task. Those assigned to the high-status role were informed that they would adopt the role of an idea producer, a position that attracts a great deal of respect and admiration. In contrast, those assigned to the low-status role were

informed that they would adopt the role of a worker, a position that receives little or no respect and admiration. A manipulation check showed that participants assigned to the high-status role perceived their role as affording greater respect and admiration, relative to participants assigned to the low-status role ($d=2.95$). This article has been cited 21 times since its publication in 2012.

In Willer (2009, study 4), after working on a purportedly collective task in small groups via networked computers, participants rated the extent to which they respected and admired each of the other group members. Participants were then shown fictitious average ratings that they received from the other group members. Those randomly assigned to the high-prestige condition were shown high ratings, whereas those in the moderate- or low-prestige condition were shown moderate or low ratings. This article has been cited 137 times since its publication in 2009.

Finally, in a study that capitalized on the previously documented tendency to pay attention to skilled and respected others (Hold 1976), Chudek, Heller, Birch, and Henrich (2012) manipulated the perceived status of two target individuals (shown in a video recording) using differential attention. Child participants watched a video recording in which these two target individuals received unequal attention from two bystanders standing between the target individuals. Both bystanders were angled toward and preferentially watching the high-status (i.e., prestigious) target for the entire duration of the clip, while ignoring the low-status target entirely. No manipulation check was performed, but the authors assumed that observers inferred greater status in targets that received more attention. The article in which this manipulation was developed has been cited 37 times since its publication in 2012.

Summary and Conclusions

In summary, a diversity of measurement instruments and experimental methods have been developed for the empirical study of social status. In this chapter, we provided an overview of many of these methods to give researchers a sense of the available means for assessing different aspects of social status—from self- and other-reports, and behavioral indices—as well as several of the most frequently used and diverse experimental methods for manipulating status.

Together, these methods contribute to the recent progression and proliferation of empirical research on social status, which has become a major topic of scientific investigation. In spite of these major advances, however, our overview also highlights several limitations. First, future research would benefit from focusing more extensively on behavioral indicators of status—such as the decision-making impact and eye-tracking measures highlighted above, which are utilized less frequently than the rating scales—to complement self- and other-reports of status. Prior research suggests that even group members' perceptions of influence, which is generally considered an optimal approach for assessing status, may be distorted by individuals' everyday beliefs about who is most skilled and deserving of status (Berger and Conner 1969), and by the motivation to rationalize the hierarchy that has emerged

(Jost and Banaji 1994). For this reason, more objective behavioral measures are particularly important.

A second area for improvement concerns the use of more behavioral-based experimental designs. Outside the lab, individuals' assessments of their own and others' relative status tend to be informed and sustained by patterns of attention, deference, and other behavioral exchanges (e.g., complementary postures) among group members. Thus, manipulations that directly and systematically vary such cues of status—such as those reviewed above involving attentional, clothing, and postural cues—may provide a way for future researchers to ensure ecological validity of their findings.

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