Power, status, and hierarchy: current trends and future challenges

Gerben A van Kleef and Joey T Cheng

Gerben A van Kleef

a University of Amsterdam, Amsterdam, The Netherlands
e-mail: G.A.vanKleef@uva.nl

Gerben A. van Kleef is professor and chair of social psychology at the University of Amsterdam and an elected fellow of SPSP, SESP, and APS. His main research interests are in the social dynamics surrounding power, emotions, and (counter)normative behavior. In studying these topics, he combines social-psychological approaches with insights from behavioral economics, law, biology, and evolutionary science. In much of his work he adopts an interpersonal perspective, examining how individuals influence one another across diverse settings such as personal relationships, group decision making, persuasion, conflict, consumer behavior, leadership, and sports.

Joey T Cheng

b York University, Toronto, Canada
e-mail: chengt@yorku.ca

Joey T. Cheng is Assistant Professor in the Department of Psychology at York University. She earned her Ph.D. from the University of British Columbia, where she first developed a fascination with the study of social asymmetries and hierarchy. She is interested

Hierarchy is a fundamental organizing principle of social life. Differences in rank – power or status – pervade nearly all social collectives, and they profoundly influence individuals, groups, and societies. Here we bring together the latest psychological science on the topic, complemented with insights from anthropology, sociology, biology, and management. At the intrapersonal level, we review research on the desire for social rank, its physiological and health correlates, its effects on affect, cognition, and behavior, and the perception, representation, and signaling of rank. At the interpersonal level, we discuss emerging insights into the social processes whereby individuals gain or lose rank, how rank shapes social sensitivity, emotional responsiveness, and morality, and how differences in rank shape cooperation, competition, and aggression. At the group level, we consider how differences in rank emerge in groups and organizations, and how such differences shape group dynamics. At the societal level, we explore the universality of rank asymmetries across cultures and stages of development and in the context of intergroup relations and economic inequality. We conclude by evaluating the current state of the science (including unresolved issues), offering heuristic definitions of key concepts, highlighting recent methodological advances, and calling for greater theoretical integration and interdisciplinary exchange.

Introduction

Hierarchy is a basic element of social life. It defines the day-to-day reality of members of countless species across the animal kingdom, including numerous types of insects, fish, reptiles, birds, and mammals. Higher-ranking individuals typically enjoy various privileges compared to their lower-ranking counterparts, varying from preferential access to food and mates to greater influence on group decisions. In humans, two key bases of social rank are power — which is based on the capacity to control resources and outcomes of self and others [1] — and status — which is based on respect and esteem from others [2]. Power and status differentials pervade nearly all types of human collectives, profoundly shape our feelings, thoughts, and actions, and coordinate social exchange between individuals, groups, organizations, and nations.

Why do asymmetries in power and status arise, and how do they shape the lives of social species? These broad questions have attracted tremendous attention from scholars across scientific disciplines. Over the last decades, the science of power, status, and hierarchy has developed into a large thriving enterprise that spans across the social and biological sciences. Historically, at this subfield's inception, psychologists have focused on different forms of power and influence [3,4], and how they are exercised

in the dynamics of competition and cooperation, particularly the psychological and biological mechanisms that operate when we compete with one another, and how we manage to successfully coordinate and orchestrate collective actions.

[5,6]. Sharing similar interests, sociologists have explored the roots of power, authority, and power structures [7], but also brought a unique focus on legitimacy and the role of cultural institutions in producing asymmetries [8,9]. Developmental scholars contributed important complementary insights from work on children's social popularity (often termed sociometric status) and aggressive behavior in shaping the outcomes of interpersonal conflict [10–13]. Anthropologists describe status and prestige relations across diverse small-scale human societies, including the most egalitarian foragers [14], and ponder over questions such as how status inequality has grown over the course of human history with the rise of wealth and resource accumulation [15]. Meanwhile, biologists have long studied dominant-subordinate relations in primates and other animals that stem from interindividual differences in fighting potential [16–18], and how dominance rank contributes to reproductive fitness [19,20].
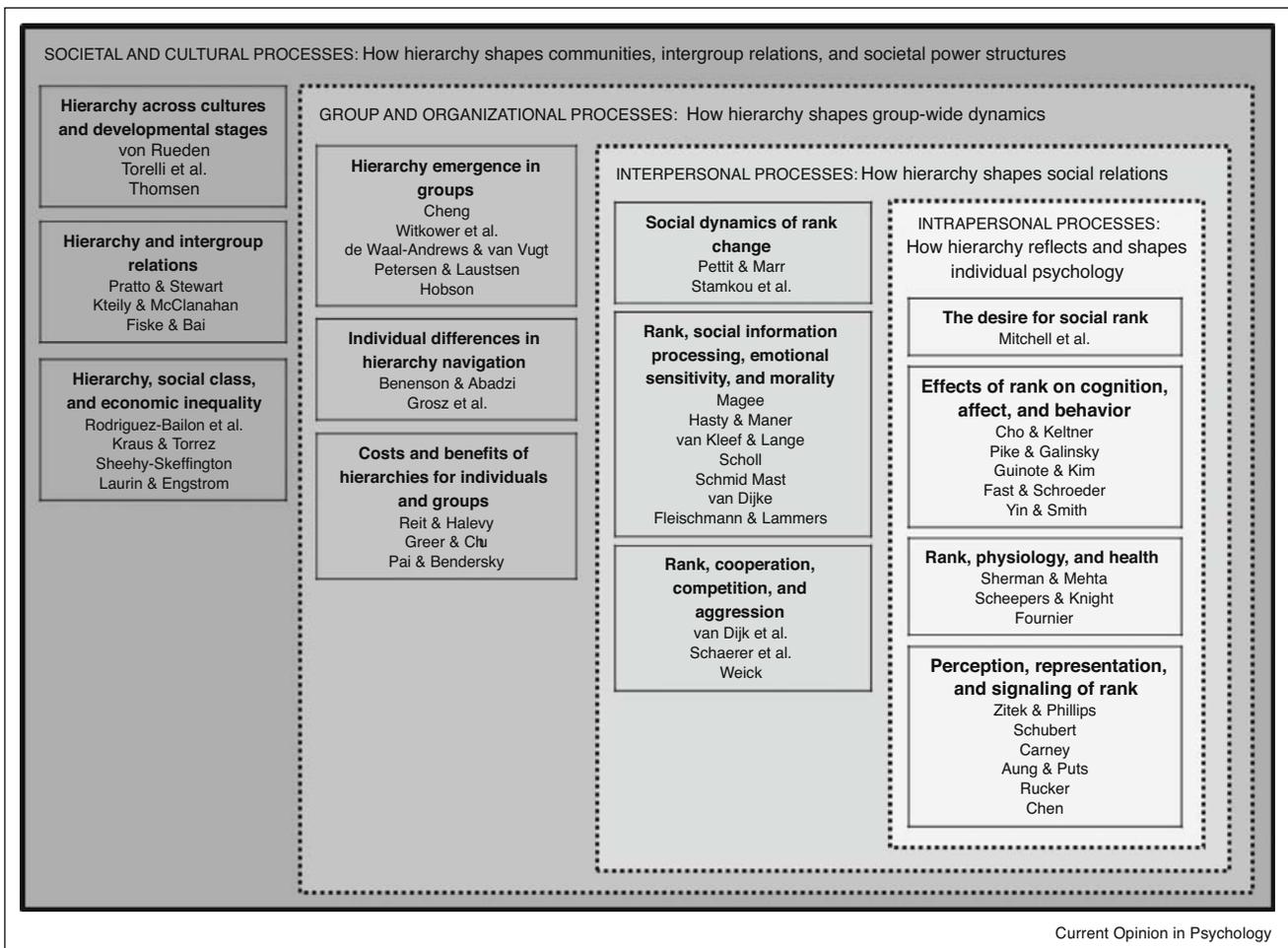
While these and numerous other early advances have been made in relative isolation and within the confines of their home disciplines, today many scholars of power, status, and hierarchy increasingly draw on pan-disciplinary theoretical insights and diverse methodologies to address problems of common interest. The time is ripe to bring these rich and diverse insights together. This special issue presents a comprehensive collection of research on the antecedents, correlates, consequences, and dynamics of power, status, and hierarchy, representing a wealth of insights from micro-level, meso-level, and macro-level approaches. By coalescing the latest science in this dynamic, complex, and exceptionally cross-disciplinary area of study, we hope to contribute to further cross-fertilization and to spark the interest of scholars in other areas whose unique perspectives may further enrich this exciting domain of research.

The current issue

The contributions to this special issue present the latest theoretical and empirical developments in scientific research on long-standing as well as newly emerging questions about power, status, and hierarchy. When do people aspire to climb the social ladder and when do they prefer to occupy a lower rung? How do people go about claiming rank, when is it granted to them by others, when is rank taken by force, and when do people lose it? How do individual characteristics and traits, such as gender and personality, affect how people acquire rank? How do (changes in) power and status influence individual affect and cognition? How do different emotions shape behavior in hierarchical contexts? What are the physiological correlates and health consequences of holding higher versus lower positions in social hierarchies? How is social rank signaled, perceived, and captured in physical and symbolic representations? Are infants and young children capable of mentally representing hierarchical relations? How do differences in power and status shape social sensitivity, cooperation, competition, and aggression? When does hierarchy help or harm groups? Is social hierarchy a human universal? How does culture affect how people see or seek power and status? Readers will find the answers to these and other fundamental questions in the pages of this volume.

The 48 contributions are organized according to their primary level of analysis — intrapersonal, interpersonal, group/organizational, or societal/cultural—and present perspectives from psychology as well as adjacent disciplines such as biology, anthropology, sociology, and management. Because of their inherently social constitution, effects of power and status on individuals occur in the context of relationships with other individuals, which are in turn nested in groups and societies (see Figure 1). Processes at

Figure 1

The nested nature of hierarchical processes as illustrated by the contributions to the current special issue. Because of their inherently social constitution, effects of power and status on individuals occur in the context of relationships with other individuals, which are in turn nested in groups and societies. Processes at these different levels of analysis mutually influence one another. A thorough understanding of power, status, and hierarchy therefore requires an integrated multi-level perspective.

these different levels of analysis mutually influence one another. A thorough understanding of power, status, and hierarchy therefore requires a multi-level perspective. Reflecting the nested nature of power, status, and hierarchy, several papers in this volume cut across multiple levels of analysis, conceptually or empirically, and are therefore cross-referenced in more than one section.

Section 1: intrapersonal processes

Fundamental questions regarding the antecedents, concomitants, and consequences of power, status, and hierarchy have generated a blossoming literature on how variations in rank influence human psychology. The contributions to Section 1 of this special issue address key questions at the intrapersonal level of analysis related to the desire for social rank, the effects of rank on affect, cognition, and behavior, the physiological and health

correlates of high versus low rank, and the perception, representation, and expression of rank.

The desire for social rank

The desire for social rank has been referred to as a fundamental human motive [21]. But *why* are people so preoccupied with climbing social hierarchies? This fundamental question is tackled by Mitchell *et al.* (also see Pettit and Marr in Section 2, and Grosz *et al.* and Benenson and Abadzi in Section 3). Mitchell *et al.* show that people desire higher rank because of the diverse (social) benefits it affords, including autonomy, wellbeing, self-esteem, social acceptance, and access to resources. They also discuss individual differences (e.g., gender, testosterone, self-monitoring, entitlement) and situational influences (e.g., control threat, hierarchy mutability) that modulate the desire for rank. Among other things, their review suggests that women have a

greater desire for status-based rank, whereas men have a greater desire for power-based rank.

Effects of rank on cognition, affect, and behavior
In the early 2000s, research on social power was kick-started by the approach/inhibition theory of power [1], which offered a first comprehensive theoretical account of the effects of power on cognition, affect, and behavior. In their contribution to this special issue, Cho and Keltner review the accumulated evidence for the approach/inhibition theory. Key empirical patterns they identify relate to the effects of power on positive versus negative affect (also see van Kleef and Lange in Section 2), attention to rewards versus threats, automatic versus systematic/controlled cognition, and behavioral disinhibition versus inhibition.

The notion of behavioral disinhibition also features prominently in the contribution by Pike and Galinsky. The starting point of their analysis is the robust finding that power leads to action [1,22]. Pike and Galinsky challenge the common interpretation that power leads to action because it 'presses the psychological gas pedal', arguing instead that power 'releases the psychological brakes' on action. They review evidence that power does so by reducing the (anticipated) psychological and social costs of action.

Guinote and Kim offer a different perspective on the effects of power on behavior—one rooted in the focus on how power drives the initiation and pursuit of goals (also see Hasty and Maner in Section 2). Fast and Schroeder also emphasize the link between power and goal pursuit, and they examine implications for decision making and artificial intelligence. Finally, Yin and Smith review evidence that power improves cognitive functioning, as reflected in more controlled information processing, better executive functioning, and more abstract thinking.

Rank, physiology, and health
That hierarchy is a fundamental organizing principle of social life is reflected in low-level neuroendocrinological and cardiovascular correlates and health consequences of rank. Sherman and Mehta show that (threat of) low status is associated with higher levels of cortisol (indicating stress). Scheepers and Knight similarly demonstrate that stable status differences are stressful for low-status individuals, as reflected in increased cortisol and a cardiovascular response-pattern indicative of threat. Conversely, when status differences are unstable, high-status individuals exhibit threat responses, whereas low-status individuals show challenge responses. Fournier further demonstrates that social rank is associated with cardiovascular, respiratory, rheumatoid, and psychiatric disease and mortality via subjective perceptions of social status.

Perception, representation, and signaling of rank
Also reflecting the fundamental nature of social hierarchy, Zitek and Phillips review evidence that people are closely attuned to hierarchical information, which they process quickly, automatically, and accurately. They note that clear and easily processed hierarchical structures help people satisfy their need for control, which may contribute to hierarchy maintenance. Schubert argues that mental representations of hierarchical relations are grounded in the body (e.g., size, strength) and in its interactions with the physical and social environment, further underlining the deep-rooted nature of hierarchy.

Shifting the focus to signaling, Carney summarizes research on the nonverbal display of power, status, and dominance, which she finds are often expressed similarly (also see van Kleef and Lange in Section 2). Relatedly, Aung and Puts examine how vocal pitch is associated with (perceptions of) dominance, power, and leadership. They conclude that pitch is an 'honest signal' of status and competitive success. Taking a more applied perspective, Rucker examines how people signal rank in the context of consumer behavior (e.g., through luxury consumption) and how others respond to such signals. Finally, Chen reviews developments at the interface of social power and the self, presenting evidence on how power influences self-expression and independent versus inter-dependent self-construal.

Section 2: interpersonal processes
Reflecting that power, status, and hierarchy are inherently social phenomena that manifest themselves in relations between people, a complementary stream of research has begun to uncover the interpersonal (often dyadic) dynamics of power, status, and hierarchy. The contributions to Section 2 of this special issue provide important new insights into the social processes whereby individuals gain (or lose) rank, how rank shapes social sensitivity and (emotional) responsiveness to others, and how differences in rank shape cooperation, competition, and aggression.

Social dynamics of rank change
Power, status, and hierarchy are often conceived of as relatively stable and static, but it is increasingly acknowledged that hierarchies can be in constant flux [23]. Pettit and Marr's contribution deepens insight into the dynamic nature of hierarchy by discussing how individuals respond to changes in their own and others' status, and who strives for status change (also see Mitchell *et al.* in Section 1). They propose that people understand and navigate these dynamics as 'trajectories', building future status expectations on past changes and current behaviors. Also adopting a dynamic approach to social hierarchy, Stamkou *et al.* explore the consequences of (counter)normative behavior for individuals' ability to rise up the ranks, which they summarize in their threat-opportunity framework of norm violation and rank. They argue and show that norm

violators ascend in social hierarchies when their actions promote group goals, but descend when their actions obstruct observers' self-interest or culturally reinforced goals.

Rank, social information processing, emotional sensitivity, and morality

Over the past decades, researchers have shown a keen interest in the effects of rank on social information processing, interpersonal sensitivity, and social-emotional responsiveness [24–26]. In their social distance theory of power, Magee and Smith [27] theorized that the asymmetric dependence associated with power differentials creates asymmetric social distance in power relations, whereby higher-power individuals experience comparatively greater distance to others than lower-power individuals. In his current contribution, Magee reviews the latest lines of evidence revealing how asymmetric social distance between high-power and low-power actors shapes the coordination of goal pursuit, social attunement and attention, interpersonal dominance and aggression, and responses to social rejection. Hasty and Maner discuss the effects of power on social distance in conjunction with effects on goal pursuit (also see Section 1), exploring implications for (among other things) reduced perspective taking and social sensitivity, and increased egocentrism and stereotyping. They also consider the need of high-status individuals to be alert for signs of social disapproval.

van Kleef and Lange examine the effects of rank on emotional processes. Their review demonstrates that lower-ranking individuals tend to accurately perceive and respond to the emotional expressions of others, whereas higher-ranking individuals do so only when others' emotions are relevant to their own goal pursuit. They also show that lower-ranking individuals are inclined to adapt their emotional expressions to the social context, whereas higher-ranking individuals express their feelings more freely. These findings fit the broader conclusion that social hierarchies prioritize the goals, feelings, and desires of higher-ranking individuals [23].

Consistent with the notion that powerholders' emotional sensitivity is contingent on their momentary goals, new evidence indicates that the effects of power on social information processing depend on how powerholders construe their power. Scholl reminds us that power comes with opportunities as well as responsibilities, and she argues that the effects of power depend on how one interprets one's power. Schmid Mast et al. make a compatible case that social information processing does not depend as much on power per se, but on how powerholders understand their power. For instance, they present evidence that construing power as responsibility results in better (rather than poorer) interpersonal accuracy. Reflecting on this literature, Scholl notes that effects of power on goal-directedness can be interpreted either as signs of selfish exploitation of opportunities or as reflecting a willingness to assume responsibility for the attainment of shared task goals. Thus her contribution suggests opportunities for a better integration of the largely isolated literatures on power and leadership. van Dijke further paves the way for such integration by reviewing research on the effects of power on influence processes leaders may use to accomplish shared goals. Specifically, he considers how power shapes leaders' punishment of norm transgressions, concern for followers, and procedural fairness enactment as well as individual and situational factors that shape these processes.

Finally, Fleischmann and Lammers challenge the popular yet perhaps overly simplified notion that 'power corrupts'. They propose, instead, that higher-power individuals have a greater tendency to deliberate about moral issues, integrate moral emotions and cognitions, and follow principles and rules, and that these combined tendencies can push moral judgment and behavior in opposite directions depending on prevailing goals and circumstances. They conclude that these tendencies of the powerful make for a rich, mature, and multifaceted form of morality.

Rank, cooperation, competition, and aggression

A central question at the interpersonal level of analysis is how rank shapes social behaviors such as cooperation, competition, and aggression. van Dijk et al. argue and show that the effects of power on cooperation and competition can be fruitfully studied using economic games. They review research showing how various economic games can be used to operationalize different bases of power — including asymmetric dependence, power to reduce dependence, punishment or reward power, and information power — and to study their effects on cooperation, competition, exploitation, and conflict.

Schaerer et al. adopt a compatible focus on power in negotiation, also distinguishing among different sources of power (i.e., alternatives, information, status, social capital, expertise, punishment). They show that, irrespective of its source, power has fairly consistent positive effects on individual value claiming, whereas the effects of power on dyadic value creation are less straightforward and subject to moderating influences such as the source of the power, the power distribution, and the competitiveness of the negotiation.

Finally, Weick addresses the relationship between power and aggression, which is more complex than one might be inclined to think at first blush. To make sense of apparently conflicting observations, Weick adopts a neuro-biological model that distinguishes different motivational mechanisms underlying aggression. He proposes that high power facilitates offensive aggression and agonistic marking/

display, but also notes that the elevated status that often accompanies power can counter some of power's detrimental effects on aggressive tendencies. He speculates that low-power people are more inclined to exhibit defensive aggression.

Section 3: group and organizational processes

In diverse social species, including humans, power and status dynamics become manifest in the form of within-group ranking asymmetries. In this section, we consider how rank differences emerge among members of a social group and how such differences influence the group and its members.

Hierarchy emergence in groups

The distribution of rank across members of a group follows systematic patterns. Cheng reviews insights gleaned from work that reveals how the patterning of social hierarchy in humans can be traced to two principles: dominance (coercion based on threat and intimidation) and prestige (persuasion based on skills and abilities). But how do rank disparities arise? Witkower *et al.* address this question by discussing the key emotions that promote the adaptive navigation of social hierarchies. They discuss the roles of nine distinct emotions—pride, shame, anger, fear, sadness, disgust, contempt, envy, and admiration—and their nonverbal displays in hierarchy emergence.

de Waal-Andrews and van Vugt's contribution to this question focuses on the role of choice on the part of low-ranking individuals. They propose that high-ranking individuals such as formal leaders acquire power by appealing to followers' need to be guided, protected, and to have their intra-group disputes mediated. Petersen and Laustsen focus on appealing to followers' need for between-group representation during conflict as yet another key avenue through which leaders rise to popularity.

Of course, rank hierarchies are by no means limited to human social groups, hence understanding how non-human animals organize into hierarchies may offer crucial insights. Hobson explores how diverse species across the animal kingdom rely on a suite of cognitive abilities and information about conspecifics to form hierarchies. She reviews the latest work on five key types of social information that animals access when navigating rank contests: individual experience, recognition abilities, social context, transitive inference, and network or global inference.

Individual differences in hierarchy navigation

Individuals obviously vary in their values, motivations, and capabilities. Moreover, individuals vary in their desire to climb the social hierarchy (as aforementioned in Mitchell *et al.*, Section 1). It is perhaps unsurprising then that considerable interindividual differences exist in *how* people compete for social rank. Benenson and Abadzi provide an overview of the latest insights into gender differences in competitive tactics. They highlight that men tend to compete in conspicuous, direct, and public contests, and women appear to prioritize subtle, safe, and more solitary forms of competition and alliance formation. Grosz *et al.* review our current state of understanding on why personality matters, with a focus on the greater success of extraverts and narcissists in gaining high rank, due in part to their greater status motivation and assertive behavior.

Costs and benefits of hierarchies for individuals and groups

When is hierarchy good or bad, functional or dysfunctional? Reit and Halevy present evidence that, at the group level, social hierarchies often facilitate successful collective action and improve group performance. At the individual level, social hierarchies may also confer benefits on individuals at all ranks of the hierarchy, such as cultivating intrinsic motivation and fulfilling the need for social relatedness. One perspective they offer is that hierarchies based on legitimate power and freely conferred deference can capitalize on both fronts, boosting group success and individual well-being.

Yet, hierarchy does not only supply benefits; it may at times impose costs as well, as asymmetries create opportunities for and incentivize rank contests. One obvious question is: Does hierarchy threaten group integrity? Greer and Chu detail evidence that, indeed, intense competition over rank and power struggles have deleterious effects on collective success. Yet, such rank conflicts are not inevitable. Pai and Bendersky discuss the latest insights into when status conflicts arise, and highlight key tactics and conditions for reducing the costs of rank clashes and the threat they pose on coordination failure. These interventions include, among other things, increasing the structural stability of hierarchy, reducing feelings of status threat among the high-ranking, and incentivizing information flow over monopolization.

Section 4: societal and cultural processes

As an ultra-social species, humans live in large, complex societies with both members of in- and out-groups, and regularly engage in exchanges with out-groups. These intergroup encounters provide tremendous benefits, but can also be a source of conflict and power struggles. In this final section, we explore the universality of asymmetries of human social interaction across societies and developmental stages, and in the context of between-group asymmetries.

Hierarchy across cultures and developmental stages

Social hierarchy is a human universal. The strongest evidence is perhaps its existence in even the most

egalitarian societies that maintain a cultural ethos of equality and individual autonomy. von Rueden discusses work in anthropology that sheds light on status hierarchies in the context of widespread egalitarianism that has likely characterized the vast majority of our species' history. He offers perspectives on how ecological and demographic conditions, such as the accumulation of material wealth and the spread of agriculture, may promote or suppress hierarchical societies.

Despite its universality, much cross-societal variation is likely to exist in many if not all aspects of how asymmetries emerge and influence social interactions. Looking broadly across societies, Torelli *et al.* synthesize the latest cross-cultural findings on power and status, noting large-scale differences between individualistic and collective cultures in how people mentally represent hierarchical relations, and the determinants and consequences of rank acquisition (complementing Section 3).

Finally, turning to development, Thomsen gleans insights from studies of the youngest humans to suggest that mental representations of social hierarchy develop very early and reliably in the human mind (also see Zitek and Phillips in Section 1). Even infants and young children expect high-rank agents to beget resources and prevail in conflicts. This ability to understand and infer hierarchical relations, and its early emergence in development, complement the cross-cultural work above, highlighting how hierarchy is likely part of an evolved adaptation.

Hierarchy and intergroup relations

Beyond defining asymmetries between individuals, social hierarchies delineate the social structure of complex, large-scale societies, with higher-ranking groups receiving and exercising greater power and privilege relative to lower-ranking groups. On this topic we open with Pratto and Stewart, who offer the latest perspectives on a long-standing topic of inquiry in social psychology: intergroup power relations. They provide a tour of the landscape of intergroup research, offering broad perspectives on how intergroup relations are shaped by factors such as intergroup history and political struggles, and survey the latest methodological innovations in this thriving area. Though pervasive, intergroup hostility and conflict are not inevitable. Kteily and McClanahan propose strategies for fostering intergroup tolerance and harmony, which requires an appreciation of the psychological effects of power and status on more and less privileged groups in society. Fiske and Bai explore how egalitarian social arrangements between individuals within a community or groups within society, such as through the sharing of power, can breed cooperation, trust, and tolerant relationships.

Hierarchy, social class, and economic inequality

Shifting the focus to another domain of social stratification, Rodriguez-Bailon *et al.* highlight recent perspectives on a topic that has long been of interest in the social sciences: social class and economic inequality. They propose a novel and intriguing distinction between two different consequences of inequality: mechanical effects that augment the difference between higher-powered and lower-powered individuals, and contextual effects that often close the gap between higher-power and lower-power individuals. Kraus and Torrez comment on the interplay between individuals' subjective sense of power and shifts in societal power structures, noting the robust effects that power structures at the institutional level have on individuals. One topic within this purview that has received much attention is why economic inequality persists and is resistant to change. Sheehy-Skeffington reviews one strain of research that focuses on the psychological states and decision-making tendencies that occur in response to resource scarcity and environmental uncertainty. Laurin and Engstrom offer a different perspective on this question, detailing how social inequality is, in part, perpetuated by structurally induced beliefs that undermine motivation among low income groups.

Reflections and future directions

As fundamental organizing principles of social life, power, status, and hierarchy profoundly shape individual psychology, interpersonal relationships, group dynamics, and societal and intergroup processes. The 48 contributions to this special issue review the latest cutting-edge science and provide a platform for forging greater integration of efforts across disciplines and levels of analysis. We believe such cross-disciplinary integration is a logical and necessary next step in the development of this field. Research programs that cut across disciplines and levels of analysis will contribute to a richer understanding of the dynamics of social rank and facilitate the development of multilevel theory that does justice to the inherent complexity and nested nature of hierarchical processes.

The current contributions demonstrate that the research domain of power, status, and hierarchy has matured to a stage where simple main effects are increasingly being nuanced and qualified by more complex yet theoretically grounded interaction patterns. For instance, it is becoming increasingly clear that power does not uniformly render people opportunistic, self-centered, and blind to the needs of others; rather, it facilitates the enactment of momentary goals, which may be prosocial or antisocial. Likewise, hierarchical differentiation is not inherently good or bad; it may facilitate or undermine group and societal functioning depending on characteristics of the broader context as well as the hierarchy itself, and it introduces opportunities as well as threats for individuals across the ranks. This does not deny that, across the

board, higher-ranking individuals tend to live happier, healthier, and longer lives than lower-ranking individuals. On a more optimistic note, the growing insight into the contingencies of hierarchical dynamics is paving the way for interventions that may help to ameliorate the lives of those who find themselves on the lower rungs of the societal ladder.

The present overview points to a number of challenges for future research that will require concerted efforts across the disciplinary boundaries of the social and biological sciences. Several of these challenges revolve around striking the right balance between theoretical and empirical integration versus differentiation. Power, status, and hierarchy are multifaceted, mutually consti- tuted, multilevel phenomena that cannot be understood through the lens of a single paradigm, level of analysis, or discipline. Indeed, several reviews in this issue speak to multiple levels of analysis. We believe various outstanding questions call for further theoretical and empirical integra- tion. For instance, although early insights into the affective, cognitive, and behavioral consequences of variations in social rank are gradually being complemented with insights in the physiological signatures of rank (e.g., hormonal and cardiovascular response patterns), much remains to be uncovered about how these physiological markers are associated with other, more established correlates, as well as how these various correlates are interrelated. More theoretical and empirical work is needed to obtain a better understanding of whether, how, and when physiological, experiential, behavioral, and expressive responses to (loss of) power or status hang together, mutually influence one another, or become dissociated.

Meanwhile, other research questions require greater differentiation. It is clear from recent work on the effects of power and status on social information processing, interpersonal sensitivity, emotional responsiveness, and morality that simplistic conclusions like 'power corrupts' or 'powerholders are insensitive' do not stand up to empirical scrutiny. Powerholders possess a much more colorful moral palette than previously assumed (Fleischmann and Lammers). The effects of power on social information processing depend on whether power- holders construe their power as opportunity or responsi- bility (Schmid Mast *et al.*; Scholl). Similarly, the effects of power on emotional perceptiveness and responsiveness depend on the powerholder's goals (van Kleef and Lange). These findings point to a need to problematize certain aspects of social rank by means of sophisticated theory-driven differentiation and systematic identifica- tion of moderating influences.

In some cases the right balance of integration and differentiation remains to be determined. For instance, there is reasonable agreement that power and status can be differentiated conceptually (i.e., power refers to

resource control whereas status refers to respect in the eyes of others [2]), but their empirical distinctness is equivocal. Some findings suggest that power and status have different effects [28], but other work suggests the psychology associated with different types of social standing may be quite similar [29]. Empirical work summarized in the current issue also points in different directions, with some authors concluding that "power and status can have very different effects on social judgment" (Hasty and Maner) and others concluding that power and status have rather similar effects on emotional processes (van Kleef and Lange) and nonverbal displays (Carney). Given that power and status tend to be naturally confounded in many real-life situations, we must think critically about the proper balance of differentiation and integration.

To the degree that integration is deemed desirable, it would be helpful if scholars working on related questions adopted a common language to refer to phenomena of shared interest. Terms denoting various aspects of social hierarchies such as power, status, rank, dominance, prestige, and leadership are used differently by different researchers in different fields. This complicates theoreti- cal integration and the advance of knowledge. As a heuristic solution, we suggest considering distinctions between levels of analysis and between processes and states. Hierarchy is a group-level construct, because it describes the organization of multiple individuals in a collective according to their rank. Rank, then, is an individual-level construct that denotes an individual's position in the hierarchy. Power and status are two key dimensions (or forms) of rank [2], which are best seen as states. Dominance and prestige characterize the types of between-person social relationships, psychological pro- cesses, or strategies that individuals may exhibit in order to attain higher rank within a social hierarchy [30], which themselves result in dominance-based or prestige-based rank. Leadership refers to the process of influencing followers toward the attainment of a goal [31]. The ability to exert such influence is proportionate to an individual's power and status, but the terms cannot be equated as leadership in itself is not about control over resources or respect form others; rather, it is about how such affordances are used to exert influence on others. Coming to terms with these terms would facilitate theoretical integration across disciplines.

As can be seen from the above, a large scientific enterprise has emerged over the last several decades to lay the foundation for our substantive understanding of power, status, and hierarchy. A number of methodological approaches and innovations have been crucial to arriving at these frontiers. First, field studies of how hierarchy affects 'real' human social relationships, beyond the walls of our laboratories, have generated extremely valuable insights. From experience-sampling reports of daily experi- ences of power [32] to peer-reports of hierarchical dynamics

within a community [33], these studies 'in the wild' offer a glimpse into aspects of people's rank relations that few, if any, laboratory analogs can simulate. Consider, for example, the strain of research on testosterone responses to wins and losses (and by implication, high and low rank). A recent meta-analysis indicates that the measured effect is six times stronger in the field than it is in the lab [34]. This is perhaps unsurprising given the potency and deeply personal consequences of actual rank gains and losses in real life (compared to contrived laboratory situations). Field studies offer unrivaled research opportunities, particularly when integrated with laboratory evidence.

Second, new analytic tools such as social network analysis are increasingly applied to quantify and assess the effects of rank on individual and group psychology, enabling a shift in empirical focus from individuals or dyads to social groups in their entirety. This technique captures the social ties that each individual (ego) has with their group members (alters), and can yield a suite of exceptionally valuable indices unique to this approach. Among other things, network approaches can be used to generate measures of one's social popularity and status (incoming ties), gregariousness (outgoing ties), interconnectedness (network density), and the capacity to connect and 'bridge' others (betweenness). This approach, which has been broadly applied to work on social status, has begun to generate key insights into how prestige affects knowledge dissemination within a community [35], what benefits are conferred to prestigious individuals [36], how hormonal profiles predict status and popularity [37], and how high-ranking individuals' social capital shapes collective success [38], to name a few. As these efforts illustrate, network approaches offer tremendous opportunities to research programs on hierarchy.

In conclusion, the four dozen opinion pieces of this issue underscore the new frontiers in the rapidly expanding research area on power, status, and social hierarchy. They identify topics and themes that have been (and will, in all likelihood, continue to be) pivotal to shaping new developments and questions of interest in the field. As these pieces collectively highlight, exciting advances are accumulating within and beyond the boundaries of psychological science, including in anthropology, sociology, biology, and management. We hope these multi-disciplinary insights from the contributing authors, now integrated into a shared intellectual space, will help chart new and vibrant territories in the study of rank dynamics.

Acknowledgement

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