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Status hierarchies are perhaps the single most important form of social structure within groups, ubiquitous and affecting groups' information flow, decision-making, and performance as well as the behavior and outcomes of individual members. The extent to which individuals are able to accurately perceive and navigate their groups' status hierarchies may thus be a critical determinant of their success. Research to date, however, has not yet fully examined the role of individuals' perceptions of status hierarchies. We introduce the concept of *perceived status hierarchies*, or individuals' mental representations of their groups' status hierarchies. Across four field studies, involving students in university cohorts and working adults, we find substantial variance in individuals' perceived status hierarchies, and that individuals with more accurate status perceptions exhibit higher performance. Analyses of individuals' networking behavior reveals that individuals with more accurate perceived status hierarchies seek out contact with higher status others on average, which mediates the positive association between accuracy and performance. This work makes important contributions by extending existing theories of status, connecting the literatures on status and social networks, and providing a thorough investigation into the consequences of accurate perceptions of social structure for individuals.

Keywords: status, hierarchy, social networks, perceptions, groups

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Humans are an inherently social species, and a fundamental challenge faced by individuals is how to successfully navigate the relational and social dynamics within their groups (Anderson, Srivastava, Beer, Spataro, & Chatman, 2006; Bendersky & Pai, 2018; Burt, 1992; Henrich & Gil-White, 2001). Although some past research has suggested that more accurate perception of social structure may benefit individuals (e.g., Krackhardt, 1990), this has received surprisingly scant empirical investigation and support (Brands, 2013). Here, we extend existing research on individuals' self-perceptions of their social standing within groups (Anderson, Ames, & Gosling, 2008; Anderson et al., 2006), by examining individuals' perceived status hierarchies (PSHs)—their subjective perceptions of the relative status ordering of the members of a group. We argue that individuals can vary in the accuracy of their PSHs, and that greater accuracy helps individuals to form ties with more respected and influential others within their groups, thereby benefiting their own performance. We examine these ideas across four studies of long-term face-to-face groups.

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Status Hierarchies and Variation in Individuals' PSHs

Status in groups is conceptualized as the average level of respect, admiration, and voluntary deference each individual member receives from others in the group (Anderson, John, Keltner, & Kring, 2001; Berger, Cohen, & Zelditch, 1972; sometimes referred to as "prestige"; e.g., Cheng, Tracy, & Henrich, 2010; Henrich & Gil-White, 2001). A status hierarchy represents the relative ordering of group members along this dimension, and is perhaps the most fundamental organizing structure in groups (Anderson, Hildreth, & Howland, 2015; Blader & Yu, 2017). Although it is important to note that groups can also have hierarchies based more upon dominance and intimidation than on prestige (Cheng, Tracy, Foulsham, Kingstone, & Henrich, 2013; Cheng et al., 2010; Cheng, Tracy, Ho, & Henrich, 2016; Witkower, Tracy, Cheng, & Henrich, 2019), our focus here is on groups with prestige-based status hierarchies, where members' status is based on the value they provide to the group.

Human groups of all kinds are organized into status hierarchies, including social and task-focused groups, groups of peers without formal power differences, and groups across various cultural contexts. Further, status hierarchies are a primary determinant of behavior and interaction (Bales, Strodtbeck, Mills, & Roseborough, 1951; Magee & Galinsky, 2008) as well as the outcomes that individuals (Berger et al., 1972; Henrich & Gil-White, 2001) and groups (Halevy, Chou, Galinsky, & Murnighan, 2012; Simpson, Willer, & Ridgeway, 2012) achieve. Given their ubiquity and great importance in determining both individual and group outcomes, a wealth of research across psychology, sociology, organizational

behavior, and other disciplines has examined status hierarchies within human groups, and in particular, how they form.

One of the prevailing models of status, particularly in social psychology and sociology, is based in status characteristics theory (SCT; Berger et al., 1972), also known as expectations states theory (e.g., Ridgeway, 1981).[1] According to SCT, when a group assembles, its members form expectations of the value that each member provides to the group, and status is conferred in proportion to perceived value (Berger et al., 1972).

An underlying assumption of SCT has been that individual members hold shared perceptions of their groups' status hierarchies, based in shared beliefs about the value of various individual characteristics (Berger et al., 1972, 1980) and the extent to which members possess these characteristics. Indeed, Ridgeway and Berger (1986) state that the theory "presume(s) that these beliefs are held in common by a given set of interactants" (p. 607). This has generally precluded the study of variation in individuals' perceptions of who ranks where within groups' status hierarchies.

However, recent research on status directly tested this assumption and found that although there is generally sufficient agreement in groups to create meaningful status hierarchies based on average perceptions, differences in individual perceptions are not uncommon (Kilduff, Willer, & Anderson, 2016). For example, two group members may disagree about the relative standing of a third.

There are various reasons for why such divergent perceptions might occur. From the SCT perspective, although some personal characteristics are plainly observable, group members may not perfectly agree about their relative value (Bunderson, 2003). For example, some members might value older group members for their greater experience and wisdom, whereas others might devalue them because they believe that age reduces working efficiency or creativity (North & Fiske, 2015). In turn, these differences in opinions may go unchecked because of the tendency for people to overestimate the extent to which others share their beliefs (Marks & Miller, 1987). Further, many other personal characteristics are less outwardly visible, such as intelligence and group-oriented motivation. Assessments of these may require individuals to rely on subjective and imprecise observations of group interaction (Anderson & Kilduff, 2009a), and individuals may vary in the social perceptual skills needed to make such assessments, again leading them to form divergent status perceptions. Stepping outside of the SCT model, individuals are also likely to pay attention to interactional cues to status such as speaking time and deference patterns (Cheng et al., 2013; Hall & Friedman, 1999; Ridgeway & Berger, 1986; see Hall, Coats, & LeBeau, 2005 for a review), which likewise are somewhat subjective and may require social perceptual skills to accurately observe and interpret.

In this article, we directly examine individuals' PSHs and their consequences. We define a PSH as an individual's subjective perception of the relative status ordering of individuals in a group. We propose that individuals in a group may hold varying PSHs, such that some members' perceptions will more closely approximate the group's overall average, or "actual" status hierarchy, than others, which we deem "PSH accuracy" as described below.

In studying PSHs and PSH accuracy, we build upon several streams of prior research on individuals' perceptions of social phenomenon. First, there has been some preliminary work suggesting that people, on average, perceive status differences in others at above chance levels (Mast & Hall, 2004; Srivastava & Anderson, 2011). However, individual variation in these perceptions and the consequences of that variation have yet to be studied. Second, there has been research on individuals' perceptions of their own status standing (Anderson et al., 2008; Anderson et al., 2006). This work reveals that people, on average, do not self-enhance their status in groups (i.e., perceive their own status as higher than the group on average does); however, individuals vary such that some underestimate their status, whereas others overestimate it. Overestimation of status in particular has been linked to reduced acceptance within the group (Anderson et al., 2008; Anderson et al., 2006). Although PSH accuracy and status self-perception both entail assessments of status, self-perceptions are inwardly focused, whereas PSH accuracy involves the accurate perception of relative standing between others, which among other things, is apt to require observation and assessment of interactions not involving the self.

Third, researchers have examined individuals' cognitive social networks, that is, the set of dyadic interaction relationships that they perceive to exist between members of their groups (e.g., who talks to whom about work-related matters; for a review, see Brands, 2013). Significant variation in cognitive social networks has been observed across individuals within the same organization (Casciaro, 1998; Flynn, Reagans, Amanatullah, & Ames, 2006; Krackhardt, 1990, 1992; Marineau, Labianca, Brass, Borgatti, & Vecchi, 2018), and cognitive network accuracy has been associated with perceived power (Krackhardt, 1990, 1992). Both PSHs and cognitive social networks capture perceptions of social structure; however, although there may be some overlap between knowledge of which pairs of individuals interact with one another and which individuals are highly respected and influential, these are conceptually distinct. Network perceptions are of one-on-one relationships and interactions, whereas status hierarchy perceptions will be based upon assessments of multiple individuals' characteristics as well as observation of group interactions, where signals of the relative status each individual holds are on display. These could include the extent to which an individual dominates conversation, and the extent to which others listen when that individual is speaking, look to that individual for approval, and defer to any suggestions that individual makes (e.g., Hall, Coats, & LeBeau, 2005; Ridgeway et al., 1985). Status signals also include verbal cues such as vocal pitch, smiling, gazing, and nodding (Bales et al., 1951; Cheng et al., 2016; Magee, 2009; for a review, see Hall et al., 2005).[2]

Other isolated articles have examined individuals' perceptions of group membership (i.e., who is part of a group; Freeman &

[1] Other models of status, such as dominance-deference orderings, are prevalent in disciplines like evolutionary anthropology and psychology (e.g., Buss, 2008; Henrich & Gil-White, 2001; Johnson, Burk, & Kirkpatrick, 2007; von Rueden, Gurven, & Kaplan, 2008), as well as sociobiology/biology (e.g., Barkow, 1975; Bernstein, 1981; Ellis, 1995; Hill, 1984; Rowell, 1974; Sapolsky, 2005; Schenkel, 1967). For a complete review, see Cheng et al. (2013).

[2] In our studies, we examine the overlaps between PSH accuracy and status self-enhancement and cognitive network accuracy, to confirm that PSH accuracy is a distinct construct.

Romney, 1987)[3], group conflict (Jehn, Rispens, & Thatcher, 2010; Sinha, Janardhanan, Greer, Conlon, & Edwards, 2016), and group diversity (Daniels, Neale, & Greer, 2017), although none of this work has examined individual-level consequences of these perceptions.

Accuracy of Perceived Status Hierarchies

Consistent with the work on self-perceptions of status and cognitive social networks (e.g., Anderson et al., 2006; Brands, 2013), we focus on the accuracy of individuals' PSHs in this initial investigation, and explore the effects of accuracy on social networks and performance. To measure accuracy, a "right answer" is needed, and with respect to socially constructed phenomena such as status hierarchies, this is less objective than it might be in other cases (e.g., a math problem). Status researchers measure groups' status hierarchies by the average peer-rated status of each group member, across all of his or her teammates, consistent with the definition of status as the extent to which others respect and admire the focal individual (Anderson et al., 2001, 2015). Given this, we will refer to the hierarchy determined by average peer-ratings of status as the group's actual status hierarchy, although we acknowledge that this is socially constructed. In line with prior research on the accuracy of social perceptions (e.g., Funder, 1987; Kruglanski, 1989), we measure the accuracy of an individual's PSH as the level of correspondence between his or her PSH and this actual status hierarchy, capturing in effect the extent to which the individual perceives the status hierarchy in a manner consistent with the group on average. Although our focus here is on the consequences of PSH accuracy rather than its antecedents, it is likely to be driven at least partly by certain social perceptual skills relevant to group dynamics, as well as other factors that we discuss in the general discussion.

Benefits of Accurate PSHs for Individual Performance through High Status Contacts

In thinking about how PSH accuracy may affect individuals within groups, we focus primarily on groups with prestige-based status hierarchies, in which perceived task competence and value provided to the group are rewarded with respect and admiration (Henrich & Gil-White, 2001). This is in contrast to groups with dominance-based hierarchies, in which high-ranking individuals may simply be more intimidating and forceful (Cheng et al., 2013, 2010), which we consider in the general discussion. Although prior research has documented various factors that can diminish the correlation between actual competence and status in prestige hierarchies, including biased beliefs about the competence of different demographic groups (e.g., Ridgeway, 1991, 2001) and inaccurate interpretations of behavioral cues such as assertiveness and confidence (Anderson & Kilduff, 2009a; Anderson, Willer, Kilduff, & Brown, 2012), this correlation is still generally positive (Bottger, 1984; Driskell & Mullen, 1990; Henrich & Gil-White, 2001; Laughlin, Kerr, Davis, Halff, & Marciniak, 1975; Littlepage, Schmidt, Whisler, & Frost, 1995; Van Vugt, 2006). Thus, our arguments below operate under the assumption that groups' status hierarchies are somewhat meritocratic, where status is an important cue to relative competence and performance levels, things that may be difficult to observe directly (Henrich & Gil-White, 2001; Humphreys & Berger, 1981).

High-status, prestigious individuals have a "magnetic" quality; indeed, human beings are thought to have evolved to seek "close proximity to, and prolonged interaction with" high status others (Henrich & Gil-White, 2001, p. 165). This is in part because being around them provides important learning opportunities because of their generally higher competence (Cheng et al., 2010; Henrich & Gil-White, 2001); moreover, high status others are often generous and group-motivated (e.g., Blader & Chen, 2011; Willer, 2009), also making them desirable interaction partners. Thus, given the time and energy required to seek out and maintain contact with others (Marks, 1977), we can expect that individuals will tend to seek out greater contact with those that they believe to be high in status, and lesser contact with those they believe to be low in status, on average.

That said, we predict that the extent to which individuals are successful in achieving this goal of observing and interacting with high status others will be partly driven by their PSH accuracy; motivation by itself will not be not sufficient. An individual low in PSH accuracy may spend time observing and attempting to connect with those she believes to be high in status, but because of her inaccurate perceptions, these individuals will not actually be as high in status as she believes them to be. By contrast, an individual high in PSH accuracy will have a better sense of the group's actual status hierarchy and, thus, will be more able to achieve contact with actual high status others, holding the motivation to do so constant. Therefore, we predict that the greater an individual's PSH accuracy, the greater the average status of the individuals he or she seeks out contact with.

In turn, contact with higher average status others should benefit individuals' own performance. As discussed above, individuals who are admired, watched closely, and deferred to by others typically possess higher levels of competence than those who are not, and are exemplars from whom individuals can learn important skills, knowledge, and best practices for success (Henrich & Gil-White, 2001). Contact with high status others could take a variety of forms—some more proactive, such as directly asking for advice, help, or mentorship, and others more passive, such as quietly observing and imitating the high status others' behaviors and habits. For example, a recent college graduate who joins a consulting firm could benefit greatly from "learning the ropes" via contact with high status associates in the firm, even if that contact simply involves passive, yet close, observation of the associates' work habits, interactions with clients, and types of projects they asked to be assigned to.

Thus, we predict that individuals with more accurate PSHs will exhibit higher performance, as a result of contact with higher status others on average. By contrast, because of their reduced contact with high status others, individuals with less accurate PSHs will have fewer opportunities to learn valuable skills and information. Further, they may attend to and imitate the behavior of relatively low status others, whom they mistakenly believe to be high in status, which could lead them to adopt inefficient or otherwise

[3] These authors referred to this as "social intelligence," which is a term that has been occasionally used in other work; however, the scattered literature on social intelligence "shows little agreement about the definition and the content of this construct." (p. 11, Kosmitzki & John, 1993). Thus, we do not discuss social intelligence any further as it may simply be too broad of a construct.

detrimental work habits. In the words of evolutionary theorists, those who "pick their models on the basis of current deference distribution," and thereby "preferentially copy models who are likely to possess better-than-average information" should benefit (Henrich & Gil-White, 2001, pp. 167–168).

Contact with high status others may also facilitate performance in ways that operate independent of learning. In particular, as suggested by status characteristics theory, high status members are influential within and beyond their domains of expertise (Ridgeway & Berger, 1986). For instance, higher status individuals wield more influence over group decisions on specific tasks such as math problems, even when they have no greater skill or expertise in those tasks (e.g., Anderson & Kilduff, 2009b). Better knowledge of who holds influence over group decisions, and contact with those individuals, could be important to individual performance, in various ways. For example, consider an employee seeking to rally support for a new initiative she hopes to lead or otherwise persuade the group to take action that is apt to benefit her (e.g., assign her to an attractive project or high value client). If she is able to persuade high status individuals to support her idea or request, support from others in the group will be more likely to ensue, increasing the chances that it gets implemented. In a sense, a more accurate PSH could increase an individual's ability to *indirectly* influence the group, via high status others, and this would be even stronger to the extent that the individual has already acted upon her PSH and worked to form positive relationships with these high status others. In contrast, an individual with a less accurate PSH would be less effective at generating support for the new initiative, or otherwise indirectly wielding influence, all else being equal. Thus, even if the high status individuals in a group are no more competent on average, their greater influence over group decisions and activities still makes accurately identifying them valuable to the focal individual.

Some existing research has already observed benefits of contact with high status others, for employment outcomes (e.g., Bian & Ang, 1997; de Graaf & Flap, 1988; Kilduff, Crossland, et al., 2016; Marsden & Hurlbert, 1988). Lin and colleagues (1981) found that, in a U.S. sample, the occupational status of individuals' contacts was positively related to the occupational status they attained. Bian and Ang (1997) replicated this with Singaporean and Chinese samples, and Kilduff, Crossland, et al. (2016) found that assistant coaches in the NFL with connections to high-status head coaches were more likely to be promoted, although this benefit eroded over time. More directly related to our research, Kilduff and Krackhardt (1994) observed positive correlations between the "prominence" of an individual's most prominent friend - as assessed by the number of people who went to that friend for advice as well as that friend's formal rank - and the focal individual's job performance. We extend these studies by examining how individuals' overall set of connections with high status others affects their performance within groups. It is important to note that there could be other possible ways in which PSH accuracy may benefit performance; we just argue that contact with higher average status others is one primary mechanism.

It is also important to consider the generalizability of the proposed benefits of PSH accuracy. Notably, in order for PSH accuracy to have real meaning or significance, there must exist a meaningful status hierarchy within the group, which will require some level of agreement among members as to who is higher versus lower in status. If there is no, or very little, status agreement in the group, there will be no reliable patterns of deference and admiration, and the group will effectively lack a status hierarchy. In such a case, much of what we know about status dynamics in general would not apply, as well as our proposed effects of PSH accuracy. On the other hand, if there is perfect consensus around who ranks where in the status hierarchy, then every member of the group, by definition, would hold a perfectly accurate PSH, and so there would be no variation in PSH accuracy. Thus, PSH accuracy will be most relevant and important within groups in which there exists moderate, but not perfect, status consensus. Conceptually, this is an important boundary condition; however, in practice, very low or very high status consensus appears to be rare. Research on status agreement versus disagreement is still in its nascence, but Kilduff, Willer, et al. (2016) found, across two studies involving 80 groups of four-to-six members, that the vast majority of groups experienced moderate, but nonperfect, status consensus (average r_{wg} values of .85 in four-person groups, and .56 in five or six-person groups). Only a single group experienced perfect status consensus and only one showed no consensus. This tendency toward moderate levels of status consensus is likely to be even stronger in larger groups, as larger sample sizes in general tend to lead to less extreme results (Hosking, Wallis, & Wood, 1985). These results are consistent with our belief that groups typically experience enough agreement in status perceptions for status to have real meaning—consistent with all the work highlighting the ubiquity and importance of status hierarchies (e.g., Anderson et al., 2001; Magee & Galinsky, 2008)—but enough variance in individual perceptions for PSHs to merit investigation. Empirically, we examine the level of status consensus within our groups to confirm that it indeed lies in this middle ground.

Overview of Studies and Theoretical Contributions

We conducted an initial investigation into PSHs across four studies. Study 1 examined the association between PSH accuracy and the average status of individuals' contacts among MBA students. Study 2 examined undergraduate student cohorts and tested the relationship between PSH accuracy and the average status of individuals' contacts in longitudinal fashion. Studies 3 and 4 tested the relationship between PSH accuracy and performance, as mediated by the average status of individuals' contacts, among undergraduates and full-time employees respectively.

It is worth noting some general features of our studies up front. First, consistent with prior studies of the group-level effects of status disagreements (Kilduff, Willer, et al., 2016), and the individual-level effects of individuals' actual and cognitive social networks (e.g., Marineau et al., 2018), we chose to focus on real-world, long-term groups that were of substantial importance to individuals, rather than using experiments. Our theory and research questions focus on individuals' patterns of observing, imitating, and learning from others over time, and the effects of that behavior on long-term performance—things that are difficult if not impossible to capture in experiments. We use extensive control variables and collect data at multiple time points to minimize the limitations of nonexperimental designs. Second, we did not predetermine our sample sizes, mainly because we did not have full control over them in these field studies of participating organizations—we simply collected as many individuals as the organiza-

tions were able to supply. We also did not have basis to make precise predictions about the effect sizes of PSH accuracy, given the lack of prior research. However, if we assume medium-sized effects ($\rho = .30$; Cohen, 1969), and use a desired power level of .90, the necessary sample size according to G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) would be $N = 88$, which was satisfied by our samples.

We seek to make several important theoretical contributions with this research. First, we extend research on social hierarchy. We build upon recent trends toward exploring the subjective and competitive aspects of status (e.g., Anderson et al., 2006; Bendersky & Hays, 2012; Kilduff, Willer, et al., 2016) by extending the classic view of status as equally visible to all (Berger et al., 1972; Berger, Rosenholtz, & Zelditch, 1980), and identify a new way in which status dynamics help determine individual success within groups and organizations. Second, we form important connections between the prominent research streams on status dynamics and social networks, which have existed largely independent of one another despite both focusing on the informal social structure of groups (see Kilduff, Crossland, et al., 2016 for one recent exception). Third, we contribute to the large literatures on the determinants of academic (Park & Kerr, 1990; Poropat, 2009) and job performance (Greenhaus, Parasuraman, & Wormley, 1990; Judge & Ilies, 2002). Although common wisdom may suggest that a more accurate understanding of the social dynamics within one's groups should be important to performance, little empirical research has examined this question (for instance, evidence linking cognitive network accuracy to performance is very limited; see Brands, 2013 for a review), leaving researchers unclear as to whether, and to what degree, this matters, as well as *which* aspects of social dynamics may be important to perceive accurately.

Study 1: PSH Accuracy and Status of Contacts in MBAs

Study 1 was a first test of the proposed positive relationship between PSH accuracy and the average status of individuals' contacts. Participants were an entire class of 392 full-time Master of Business Administration students (35.5% female) from a leading U.S. business school. Before enrollment, students were assigned to one of six blocks by the school administration (63 to 69 students each). Students stay in the same block for their entire MBA program, and spend a great deal of time with their block-mates in and outside of class.

This study was conducted approximately 1.5 months after participants entered the MBA program. Participants ($N = 239$, 61% response rate) were briefed on the research by the school administration, and were provided a link to the online survey via e-mail. As with all of our studies, they were guaranteed confidentiality and participated on a voluntary basis.

Measures

Independent variable: PSH accuracy. To measure PSH accuracy, we first assessed the actual status hierarchy within each block. Because of concerns from the administration over the potential sensitivity of having students directly rate one another's status and social relationships, we assessed the status hierarchy and participants' network contacts via a nomination method. Participants were provided dropdown lists of the names of all members of their blocks, and were asked to nominate up to 10 members that they perceived to be "especially respected, admired, and influential" within the block, similar to some studies of organizational networks that have used open-response lists (e.g., Brass, 1984; Mehra, Kilduff, & Brass, 2001; Totterdell, Holman, & Hukin, 2008). Notably, although some researchers conceptually distinguish influence as a downstream consequence of status (Cheng et al., 2013; Magee & Galinsky, 2008), other definitions of status have included influence (e.g., Anderson et al., 2015) and many prior group studies have included influence in measures of status because it is perhaps the most visible cue to status, and the two are typically highly correlated in group settings (e.g., Anderson, Brion, Moore, & Kennedy, 2012; Anderson & Kilduff, 2009b; for a comprehensive discussion on the relationship between status and influence see Cheng et al., 2013, p. 106).

The actual status score of each person was assessed by the average number of other blockmates who nominated the focal individual as "especially respected, admired, and influential" ($M = 7.09$, $SD = 8.26$). Then, we measured PSH accuracy for each respondent as the average status of the blockmates that he or she nominated as high in status. Thus, respondents who nominated members that the group also saw as high in status were deemed high in PSH accuracy; respondents who nominated members that few others saw as high status were lower in PSH accuracy.

Dependent variable: Average status of contacts. We assessed the average status of the other group members that each individual sought contact with by adapting methods from social networks research. Participants were again provided with the full list of students in their blocks, and were asked to indicate up to 20 individuals that they "go to for help or for advice if you had a question or a problem? Such help or advice might include assistance on courses, career development, or other things" (e.g., Flynn et al., 2006; number of others that participants reported going to for advice: $M = 7.5$, $SD = 4.73$). We chose to assess individuals' advice-seeking ego networks (Burt, 1992; Ibarra, 1993), because that best matched our theoretical argument that PSH accuracy benefits individuals' performance by helping them to seek out contact with, and learning opportunities from, high status others. We measured the average status of participants' contacts by the average actual status score of all the people they reported going to for advice.

As a robustness check, we also ran analyses using the confirmed advice-seeking network to construct our dependent variable. We asked participants to indicate up to 20 individuals that came to them for help or advice, and combined these responses with participants' reports of whom they went to for help or advice (a tie is confirmed if an individual *j* reported going to an individual *q* for advice, and *q* reported giving advice to *j*; Krackhardt, 1990).

Control variables.

Actual status score. We controlled for participants' actual status score, computed as described above, to account for the possibility that individuals higher in the status hierarchy might have a better sense of who the other high status members were.

Network position. Research on social networks finds that individuals in "brokerage" positions, who connect people who are themselves unconnected (e.g., Burt, 1992; Freeman, 1978; Mehra et al., 2001), can benefit from their position in a variety of ways, including increased performance (e.g., Burt, 1992; Mehra et al.,

Table 1
Study 1 Simple Bivariate Correlations and Descriptive Statistics of Variables

Variable	Mean	*SD*	1	2	3	4	5	6
1. PSH accuracy	15.21	5.54	—					
2. Female (1 = yes, 0 = no)	.39	.49	−.08	—				
3. Years of working experience	4.85	2.24	.01	−.07	—			
4. U.S. citizen	.76	.43	−.01	−.01	.09	—		
5. Network betweenness centrality	92.49	89.81	.05	.02	.08	.01	—	
6. Actual status score	7.09	8.26	.18*	.02	.12†	.17*	.39**	—
7. Average status of contacts	8.97	5.24	.54**	−.05	.01	.12†	.03	.25**

Note. $N = 208$. PSH = perceived status hierarchy.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

2001). It is also possible that occupying such a position as a connector could provide individuals with greater knowledge of the status dynamics within their groups. To address the possibility that individuals in such advantageous positions might have greater PSH accuracy, we controlled for participants' brokerage position by measuring their *betweenness centrality*. Betweenness centrality is calculated as the proportion of times the focal individual lies on the shortest path between each pair of individuals in the network, across all pairs (Freeman, 1978), and has been widely used for measuring brokerage (e.g., Mehra et al., 2001).

Demographics. We controlled for participants' gender (1 = female, 0 = male), years of prior working experience, and citizenship (1 = U.S. citizen, 0 = non-U.S. citizen).[4]

Results

Thirty-one participants were excluded from analyses because of missing values for the dependent variable and/or control variables (we used this same criterion across all studies). This included 30 participants who reported zero advice-seeking contacts despite others reporting that they gave these students advice ($M = 3.6$, $SD = 2.7$), and, thus, had missing values for the dependent variable, and one participant who did not report working experience. In this and subsequent studies, we confirmed that participants eliminated from the sample did not differ systematically in terms of PSH accuracy or other characteristics.[5]

Table 1 displays descriptive statistics and simple bivariate correlations among variables. As expected based upon existing theory (Henrich & Gil-White, 2001), we found individuals were more likely to seek advice from those that they believed to be high status, $r = .21$, $p < .01$. Further, consistent with our prediction, PSH accuracy was positively correlated with the average status of MBA students' contacts, $r = .54$, $p < .01$.

As participants were clustered into blocks, we next applied multilevel modeling (Level 1: individual; Level 2: block) to account for the within and between block interdependency in our data, using the wild score bootstrapping procedure (Kline & Santos, 2012) for inference with a relatively small number of clusters (Cameron, Gelbach, & Miller, 2008; Cameron & Miller, 2015). We used this same method in all of our studies. As shown in Table 2, PSH accuracy was positively related to the average status of MBA students' contacts in a simple model with no controls (Model 1: $b = .42$, $p < .01$), and in a full model with control variables (Model 2: $b = .38$, $p < .01$). This effect also held up when using confirmed advice ties rather than advice-seeking ties (simple effect, Model 3: $b = .26$, $p = .04$; full model, Model 4: $b = .25$, $p = .04$).

Additional exploratory analyses revealed that PSH accuracy was positively related to both the average status of participants' top 25% ($b = .72$, $p < .01$) and bottom 25% ($b = .12$, $p = .08$) of contacts, in terms of status (for full model details, see p. 1 of the online supplemental materials). This suggests PSH accuracy led individuals to both seek out advice from especially high status others and avoid asking advice from especially low status others.

Discussion

Study 1 provided initial support for our predictions. MBA students who had more accurate perceptions of the status hierarchies within their blocks sought out advice from higher status others, on average.

Study 2: PSH Accuracy and Status of Contacts in Undergraduates Over Time

Study 2 was a longitudinal study that sought to provide greater evidence of a causal relationship between PSH accuracy and the status of individuals' contacts. Specifically, we tested the lagged effect of PSH accuracy at one time point (Time 1) on the status of individuals' contacts at a later time (Time 2), above and beyond the status of individuals' contacts at Time 1. By doing so, we accounted for possible reverse causality, that contact with high status others might somehow provide individuals with better insight into the status hierarchy. We also assessed individuals' perceptions of the entire status hierarchies within their groups, as well as their complete advice-seeking networks, rather than using the nomination method from Study 1, and included a variety of additional control variables, including individuals' status self-enhancement, cognitive network accuracy, and aspects of emotional and cognitive intelligence.

Participants were 538 undergraduate students (40.7% female) across 14 cohorts (35 to 40 students each) within an Engineering school in East China. Students are assigned to cohorts by the

[4] A number of additional variables, not central to the ideas or hypotheses tested here, were collected for possible other projects. The full list of variables is contained in the online supplemental materials (pp. 30–33).

[5] Descriptive statistics along with *t*-statistics and *p*-values for comparisons between participants included and excluded from each study can be found in online supplemental materials (pp. 28–29).

Table 2
Study 1 Effects of PSH Accuracy on Average Status of Contacts

	Average status of contacts						Average status of contacts (confirmed ties)					
	Model 1			Model 2			Model 3			Model 4		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	.42**	(.12)	[.007]	.38**	(.07)	[.004]	.26*	(.10)	[.04]	.25*	(.10)	[.04]
Status score				.11	(.07)	[.15]				.08	(.10)	[.32]
NBC				−.005	(.00)	[.18]						
NBC(C)										−.002	(.00)	[.70]
Female				−.27	(.31)	[.34]				1.31*	(.44)	[.02]
YWC				−.08	(.17)	[.64]				−.09	(.21)	[.66]
U.S. citizen				1.13	(.43)	[.11]				−1.34	(1.03)	[.33]
Constant	2.21†	(1.25)		2.14†	(1.16)		5.15*	(2.04)		5.72*	(2.49)	
AIC		1212.03			1202.22			1093.97			1092.70	
BIC		1225.38			1218.91			1106.22			1108.02	

Note. $N = 208$ (Models 1 & 2); $N = 158$ (Models 3 & 4). PSH = perceived status hierarchy; NBC = network betweenness centrality; NBC(C) = network betweenness centrality (confirmed ties); YWC = years of working experience. AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. A lower AIC or BIC value indicates a better model fit. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. Models 1 and 3 include only PSH accuracy; Models 2 and 4 include PSH accuracy and all control variables.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

university administration before enrollment, spend significant time with their cohort-mates in and out of class, and stay in the same cohorts during their entire undergraduate experience. This study was conducted over two rounds. The Time 1 survey took place approximately 1 month after participants entered college as freshmen ($N = 514$, 95.5% response rate), and Time 2 was 2.5 months later ($N = 526$, 97.8% response rate). Overall, 508 participants (94.42% of the sample) completed both surveys. Both surveys included questions related to status and social networks, and control variables were measured at Time 1.[6]

Measures

Independent variable: PSH accuracy. To access PSH accuracy, we first assessed the actual status hierarchy within each cohort. Participants were provided with a definition of status ("the extent to which an individual is respected and admired by others in his or her group"), and then asked to rate how much status every member in their cohort had (1 = *not at all* to 7 = *a lot*; Anderson et al., 2012; Kilduff & Galinsky, 2013). From these round-robin ratings, we computed each student's actual status as the average of their peer ratings, controlling for average cohort effects, as indicated by the *target status score* outputted by the Social Relations Model (SRM) using the TripleR program in R (Kenny, 1995; Schönbrodt, Back, & Schmukle, 2012; West & Kenny, 2011; see Anderson & Kilduff, 2009b; Anderson et al., 2006 for a similar procedure). Then, in line with prior work on perceptual accuracy (e.g., Ambady, Bernieri, & Richeson, 2000; Blackman & Funder, 1998; Levesque & Kenny, 1993; Srivastava & Anderson, 2011), we measured PSH accuracy as the Pearson's correlation coefficient between each participant's set of status ratings of their cohort-mates (self-excluded) and those individuals' actual status scores (target status scores from SRM).[7] Participants were moderately accurate on average, but with substantial variation (T1: $M = .39$, $SD = .28$; T2: $M = .43$, $SD = .31$).

Dependent variable: Average status of contacts. For every other student in their cohorts, participants indicated whether or not they went to that person for help or advice (number of others that participants reported going to for advice: T1: $M = 12.30$, $SD = 7.93$; T2: $M = 17.57$, $SD = 7.94$). The average status of participants' contacts was the average target status score across all the people that they reported going to for advice. As in Study 1, we also asked participants to indicate which other cohort-mates came to them for help or advice, and constructed our dependent measure from the confirmed advice-seeking network as a robustness check.

Control variables. Our control variables included participants' status (i.e., target status score computed by SRM), network betweenness centrality, and gender, as in Study 1, as well as other individual-level variables conceptually related to PSH accuracy or the dependent variable, described below. All control variables were measured at Time 1.

Status self-enhancement. Status self-enhancement was included for two reasons. First, status self-enhancement (Anderson et al., 2006) is probably the established construct that is most conceptually related to PSH accuracy, as both relate to the accuracy of status perceptions (the self vs. the group's entire hierarchy). It was possible that individuals who perceived their own status in a biased, self-serving, fashion might also misperceive the status of others; thus, it was important to include this measure to examine whether PSH accuracy might be redundant with status self-enhancement. Second, prior research has found that individuals who engage in status self-enhancement experience lower social acceptance within their groups (Anderson et al., 2006; Anderson et al., 2008), which could impact their social engagement and networking with others (Ladd, 1983; Kiesner, Poulin, & Nicotra, 2003) and their performance motivation (Buhs & Ladd, 2001; Ladd, Herald-Brown, & Reiser, 2008). Thus, it was impor-

[6] We conducted another, very similar, longitudinal study with a smaller sample and slightly different measures and found relatively similar results (for details, see pp. 24–25 of the online supplementary materials).

[7] Thus, PSH accuracy ranges from −1, indicating maximum inaccuracy from a perceived status ordering that is exactly opposite of the actual status hierarchy, to 1, indicating perfect accuracy.

tant to control for status self-enhancement because it might correlate with both independent and dependent measures and represent a confounding third variable.

We calculated individuals' status self-enhancement using established methods (e.g., Anderson et al., 2006; Kwan, John, Kenny, Bond, & Robins, 2004), with SRM using TripleR and calculated as: $SE = S - T - P - G$, where *SE* is status self-enhancement, S is self-rated status, T is the cohort-mean-deviated target status score, P is the cohort-mean-deviated perceiver score (a measure of how the individual typically perceived others), and G is the cohort mean status. As target status score is one part of the status self-enhancement calculation, in the following analyses we present results controlling for either the focal individual's status score or status enhancement, in separate models.

Cognitive network accuracy. To assess cognitive network accuracy, participants were asked to indicate their perceptions of the advice exchange relations among other members of their cohort (Casciaro, Carley, & Krackhardt, 1999; Flynn et al., 2006; Krackhardt, 1990). Because of the relatively large cohort sizes and survey length constraints, we presented each participant with a randomly selected list of 10 students from their cohort, and asked them to indicate the advice exchange relations between these individuals (see Flynn et al., 2006 for similar methodology). Then, we created the reference confirmed-tie advice network as per the methodology discussed in Study 1, and participants' cognitive network accuracy was measured as the number of perceived advice relations, out of the 90 rated, that matched the reference advice network (i.e., correct perception of the existence or nonexistence of advice ties).

Emotional intelligence—Reading the mind in the eyes. Emotional intelligence encompasses accurate recognition and effective management of emotions, as well the effective use of emotional information to guide thinking and behavior (Mayer & Salovey, 1997). Given survey length constraints, we focused on recognition of emotion in others (Mayer & Salovey, 1997), the dimension of EI that most conceptually overlaps with PSH accuracy. Participants' ability to recognize emotions was measured with a 10-item version of the "reading the mind in the eyes" test (RME; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001; Woolley, Chabris, Pentland, Hashmi, & Malone, 2010). For each question, participants were shown a section of a face that included the eyes, and asked to identify which emotion out of four choices best described what the person was feeling.

Cognitive intelligence—Raven's progressive matrices. Cognitive intelligence encompasses abstract reasoning and the ability to learn, remember, reason, and solve problems related to nonsocial entities such as words, numbers and shapes (Brody, 2004). It is one of the most important indicators of mental ability (Jensen, 1980), which might relate to one's ability to process hierarchy-related information. We measured participants' cognitive intelligence using a short version of the Raven's Progressive Matrices (RPM; Hunt, 2010), a widely used measure of IQ. The RPM involves sequences of shapes with one shape missing, and participants must choose the shape that best fits into the missing space (Raven, 2000). Participants had 10 minutes to try to solve 15 questions (e.g., Arthur & Day, 1994).

Need for status. Participants' motivation for status could affect the extent to which they pay attention to groups' status hierarchies and, thus, might affect PSH accuracy as well as seeking out contact with high status others. Participants completed five-items on need for status, adapted from Blader and Chen (2011) (e.g., "I wish to have high status"; $\alpha = .54$).

Trait dominance. Participants' trait dominance is an important determinant of social standing (Anderson & Kilduff, 2009b), which might further influence their attention to status hierarchy. Participants' trait dominance was measured by three-items (i.e., "assertive," "forceful," and "dominant"; $\alpha = .81$).

Self-monitoring. Self-monitoring captures the extent to which people are motivated and able to adjust their behavior to be in line with group norms. Although not directly related to PSH accuracy, self-monitoring does capture an important set of social skills relevant to group dynamics (e.g., Flynn et al., 2006). Participants completed Snyder (1974)'s 25-item measure (e.g., "I would probably make a good actor"; $\alpha = .59$).

Political skill. Political skill captures individuals' self-perceived ability to effectively understand others and use this to exert influence in the pursuit of goal attainment (Ahearn, Ferris, Hochwarter, Douglas, & Ammeter, 2004), which may relate to understanding status hierarchies and making high-value, influential contacts. Participants' political skill was measured by twelve items from the Political Skill Inventory (Ferris et al., 2005; e.g., "I am particularly good at sensing the motivations and hidden agendas of others"; $\alpha = .94$).

Family annual income. We included participants' family annual income (1 = *below 20,000 RMB*, 8 = *above 200,000 RMB*), to account for the possibility that those from different socioeconomic backgrounds are more or less attuned to hierarchical differences.

Big Five personality. Participants reported their Big Five personality, using the 10-item measure by Gosling, Rentfrow, and Swann (2003).

Results

First, we assessed overall status consensus via the a_{wg} index, a validated measure of interrater agreement that addresses the potential issue of inflation by sample size (as is the case with r_{wg} and ICC; Brown & Hauenstein, 2005). We observed average interrater agreement across cohorts and times of $a_{wg} = .58$ (ranging from .31 to .71), suggesting moderate, but nonperfect, status consensus within these groups.

Participants were excluded from analyses because of missing values for the status of their contacts at either time point (i.e., zero advice-seeking contacts, $N = 79$, despite the fact that others reported giving these students advice [T1: $M = 9.20$, $SD = 3.44$; T2: $M = 14.73$, $SD = 4.15$]) and/or control variables ($N = 9$). Table 3 displays descriptive statistics and simple bivariate correlations among variables. Consistent with our prediction, PSH accuracy at Time 1 was positively correlated with the average status of individuals' advice contacts (T1: $r = .40$, $p < .01$; T2: $r = .25$, $p < .01$). PSH accuracy was also positively related to cognitive network accuracy, $r = .13$, $p < .01$, cognitive intelligence ($r = .18$, $p < .01$), need for status, $r = .12$, $p = .02$, and being female, $r = .15$, $p = .01$, and negatively related to trait dominance ($r = -.15$, $p < .01$) and betweenness centrality ($r = -.16$, $p < .01$), all assessed at Time 1. We also observed a nonsignificant relationship between PSH accuracy and status self-enhancement, $r = .03$, $p = .58$, suggesting these two constructs are

Table 3
Study 2 Bivariate Correlations and Descriptive Statistics

Variable	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. PSH accuracy (T1)	.39	.28	—																			
2. PSH accuracy (T2)	.43	.31	$.39^{**}$	—																		
3. Female (1 = yes, 0 = no)	.43	.50	$.15^{**}$	$.15^{**}$	—																	
4. Family income (T1)	2.95	1.95	−.04	−.06	$-.09^{\dagger}$	—																
5. Extraversion (T1)	4.49	1.47	.04	.00	−.02	$.10^{*}$	—															
6. Agreeableness (T1)	4.78	1.08	$.09^{\dagger}$	.03	$.17^{**}$	.00	$.23^{**}$	—														
7. Conscientiousness (T1)	4.57	1.17	$.10^{*}$	.00	−.01	.02	$.21^{**}$	$.44^{**}$	—													
8. Openness (T1)	4.56	1.24	.01	$-.11^{*}$	$-.12^{*}$	$.16^{**}$	$.45^{**}$	$.22^{**}$	$.32^{**}$	—												
9. Stability (T1)	4.33	1.27	−.02	.00	$-.15^{**}$	$.11^{*}$	$.12^{*}$	$.34^{**}$	$.45^{**}$	$.24^{**}$	—											
10. Raven's progressive matrices (T1)	8.79	3.32	$.18^{**}$	$.15^{**}$	.03	$.11^{*}$	.07	$.12^{*}$	.06	$.15^{**}$	.06											
11. Reading the mind in the eyes (T1)	5.96	1.54	$.08^{\dagger}$	.07	$.14^{**}$	.03	.08	$.09^{\dagger}$	.08	.04	−.01	$.21^{**}$	—									
12. Need for status (T1)	4.05	.98	$.12^{*}$	.06	.06	.00	−.05	−.03	−.02	−.08	.02	.08	.03	—								
13. Trait dominance (T1)	4.41	1.47	$-.15^{**}$	$-.17^{**}$	$-.15^{**}$	.08	$.27^{**}$	.02	$.09^{\dagger}$	$.32^{**}$	$.09^{\dagger}$	$-.13^{*}$	−.08	−.08	—							
14. Self-monitoring (T1)	13.36	3.62	.00	−.05	$-.17^{**}$	$.22^{**}$	$.33^{**}$	$.18^{**}$	$.10^{*}$	$.33^{**}$	$.12^{*}$	$.10^{*}$	.06	−.06	$.22^{**}$	—						
15. Political skill (T1)	4.70	1.24	−.06	−.04	−.05	$.16^{**}$	$.36^{**}$	$.15^{**}$	$.21^{**}$	$.29^{**}$	$.23^{**}$	−.01	−.03	$.13^{*}$	$.44^{**}$	$.33^{**}$	—					
16. Cognitive network accuracy (T1)	47.49	26.01	$.13^{**}$	.06	$.16^{**}$	.00	−.01	−.01	−.02	.01	$-.09^{\dagger}$	$.12^{*}$	.04	.05	$-.11^{*}$	$-.10^{*}$	$-.09^{\dagger}$	—				
17. Network betweenness centrality (T1)	29.54	42.91	$-.16^{**}$	−.02	−.02	.07	$.10^{*}$	.00	$-.09^{\dagger}$	.03	.03	.00	.07	−.08	$.09^{\dagger}$	$.13^{**}$	$.10^{*}$	$-.19^{**}$	—			
18. Status self-enhancement (T1)	−.01	1.18	.03	−.05	−.04	$.08^{\dagger}$	$.15^{**}$	.05	$.12^{*}$	$.18^{**}$	$.13^{**}$	.03	.06	−.06	$.10^{*}$	$.12^{*}$	.07	$.12^{*}$	−.07	—		
19. Target status score (T1)	.02	.38	$.08^{\dagger}$	.06	−.02	$.11^{*}$	$.30^{**}$	$.10^{*}$	.07	$.24^{**}$	.07	$.12^{*}$	$.08^{\dagger}$	−.06	$.17^{**}$	$.28^{**}$	$.22^{**}$	−.01	$.52^{**}$	.00	—	
20. Average status of contacts (T1)	.15	.23	$.40^{**}$	$.19^{**}$	$.14^{**}$	−.04	−.02	$.10^{*}$	.07	.07	−.02	$.14^{**}$	.01	.01	$-.10^{*}$	$-.11^{*}$	$-.12^{*}$	$.24^{**}$	$-.20^{**}$	.07	.01	—
21. Average status of contacts (T2)	.12	.13	$.25^{**}$	$.34^{**}$	$.18^{**}$	.01	−.03	.03	.05	−.01	−.06	$.20^{**}$	.00	.06	$-.15^{**}$	−.07	−.05	$.14^{**}$	−.09	.04	.04	$.29^{**}$

Note. $N = 420$. PSH = perceived status hierarchy. Variables masked (T1) were assessed in Time 1, Variables masked (T2) were assessed in Time 2.
$^{\dagger} p < .1$. $^{*} p < .05$. $^{**} p < .01$, two-tailed tests.

not redundant, and that accuracy in perceiving the relative status of others operates independently of one's tendency to see one's own status in a biased manner.

PSH accuracy and average status of contacts. Supporting the premise of our theory, we again found that individuals were more likely to seek out advice from those they believed to be higher in status (T1: $r = .26$, $p < .01$; T2: $r = .23$, $p < .01$). We next used cross-lagged generalized structural equation models (Rabe-Hesketh, Skrondal, & Pickles, 2004) to test our main prediction. Participants' PSH accuracy at Time 1 positively predicted the average status of the people they reported seeking advice from at Time 2, controlling for the lagged effect of the status of their contacts at Time 1, in a simple model (Table 4; Model 1: $b = 7.02$, $p < .01$).[8,9] This same association existed in full models including all other controls (i.e., cognitive network accuracy, emotional intelligence, cognitive intelligence, network position, self-monitoring, political skill, need for status, trait dominance, Big Five personality, gender, and family income) and status enhancement (Model 3: $b = 4.80$, $p = .01$) or individuals' actual status instead of status enhancement (Model 5: $b = 4.34$, $p = .04$). This effect was consistent when using confirmed advice ties rather than advice-seeking ties (Table 5; Simple effect, Model 1: $b = 6.65$, $p = .04$; controlling for status enhancement, Model 3: $b = 5.44$, $p = .04$; controlling for individual's status, Model 5: $b = 4.80$, $p = .07$).

There was little evidence that connections to high status others facilitate greater accuracy. Time 1 average status of contacts did not significantly predict Time 2 PSH accuracy in a simple model including the lagged effect of Time 1 PSH accuracy ($b = .03$, $p = .63$). This association was also nonsignificant in models with controls including status enhancement ($b = .05$, $p = .48$) or individuals' actual status ($b = .04$, $p = .56$). We found similar results when using confirmed ties (simple model: $b = .08$, $p = .09$; controlling for status enhancement: $b = .07$, $p = .12$; controlling for individuals' status: $b = .07$, $p = .13$).

Lastly, we again found that individuals higher in PSH accuracy in Time 1 sought advice from especially high status others (based on their top 25% of contacts in status; $b = 8.88$, $p < .01$) and avoided seeking advice from especially low status others (bottom 25%; $b = 5.92$, $p < .01$) at Time 2 (see p. 4 of the online supplemental materials).

Exploratory analyses. We conducted several additional exploratory analyses (see the full results on pp. 7–8 of the online supplementary materials). In these analyses, we tested the interactions between PSH accuracy and various hierarchy related traits (e.g., need for status, political skill, and trait dominance). We did not find consistent evidence for any of these interactions. We also showed that the predicted effects of PSH accuracy remained relatively robust to including a variable that assessed whether indi-

[8] In addition to the longitudinal effects, the effects of PSH accuracy on average status of contacts within T1 ($b = 25.18$, $p < .01$) and T2 ($b = 12.64$, $p < .01$) were significant. These results can be found on the online supplemental materials (pp. 2–3).

[9] To increase the readability of results in regression analyses, we multiplied the dependent variables by a factor of 100 (we did the same for this variable in subsequent studies).

Table 4
Study 2 Effects of Time 1 PSH Accuracy on Time 2 Average Status of Contacts (Ego-Reported Ties)

	Average status of contacts (ego-reported ties) (T2)														
	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables (T1)	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	7.02**	(1.90)	[.003]				4.80*	(1.78)	[.01]				4.34*	(1.84)	[.04]
Average status of contacts	10.86*	(4.59)	[.03]				8.96†	(4.44)	[.08]				8.68†	(4.44)	[.08]
SSE				.39	(.45)	[.46]	.34	(.40)	[.45]						
TSC										3.82†	(2.63)	[.08]	2.42	(2.75)	[.36]
CNA				.02	(.02)	[.49]	.01	(.02)	[.77]	.01	(.02)	[.62]	.01	(.02)	[.83]
NBC				−.03†	(.01)	[.07]	−.01	(.01)	[.54]	−.04*	(.02)	[.02]	−.02	(.03)	[.43]
RPM				.77**	(.20)	[.0003]	.65**	(.21)	[.0004]	.74**	(.19)	[.0003]	.64**	(.20)	[.0002]
RME				−.60	(.29)	[.10]	−.62†	(.27)	[.06]	−.59	(.32)	[.13]	−.60†	(.29)	[.08]
Extraversion				−.06	(.37)	[.88]	−.10	(.36)	[.79]	−.17	(.33)	[.62]	−.17	(.31)	[.61]
Agreeableness				−.27	(.46)	[.53]	−.42	(.44)	[.29]	−.29	(.47)	[.52]	−.43	(.44)	[.29]
Conscientiousness				1.02	(.54)	[.12]	.83	(.52)	[.19]	.98	(.54)	[.14]	.82	(.52)	[.20]
Openness				.03	(.79)	[.99]	−.11	(.69)	[.91]	−.03	(.76)	[.98]	−.14	(.68)	[.88]
Stability				−.64	(.39)	[.16]	−.59	(.35)	[.17]	−.59	(.36)	[.15]	−.55	(.32)	[.16]
Female				3.11†	(1.72)	[.08]	2.88†	(1.72)	[.09]	3.07†	(1.68)	[.08]	2.88†	(1.70)	[.08]
Family income				.41	(.32)	[.24]	.40	(.30)	[.21]	.40	(.29)	[.24]	.40	(.28)	[.21]
Need for status				.23	(.55)	[.68]	.12	(.58)	[.84]	.22	(.56)	[.70]	.13	(.58)	[.83]
Trait dominance				−.77	(.50)	[.17]	−.72	(.52)	[.22]	−.79	(.48)	[.14]	−.72	(.51)	[.20]
Self-monitoring				−.01	(.23)	[.95]	−.02	(.22)	[.93]	−.05	(.23)	[.83]	−.04	(.23)	[.86]
Political skill				.24	(.59)	[.69]	.39	(.58)	[.51]	.16	(.58)	[.78]	.33	(.57)	[.57]
Constant	7.06**	(1.41)		6.73	(5.64)		6.66	(5.83)		9.41	(5.75)		8.19	(6.66)	
AIC		3440.75			3457.36			3399.10			3452.76			3399.21	
BIC		3485.19			3509.88			3451.63			3505.28			3451.73	

Note. $N = 420$. PSH = perceived status hierarchy; SSE = status self-enhancement; TSC = target status score; CNA = cognitive network accuracy; NBC = network betweenness centrality; RPM = Raven's progressive matrices; RME = reading the mind in the eyes; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. For readability purposes, we multiply the dependent measure, average status of contacts (ego-reported ties) (T2), by 100. Model 1 includes only PSH accuracy (T1) and average status of contacts (T1); Models 2 and 4 include all nonstatus control variables, and status self-enhancement and individuals' target status score, respectively; Model 3 includes PSH accuracy, all nonstatus control variables and status self-enhancement; Model 5 includes PSH accuracy, all nonstatus control variables, but using individuals' target status score instead of status self-enhancement.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

Table 5
Study 2 Effects of Time 1 PSH Accuracy on Time 2 Average Status of Contacts (Confirmed Ties)

	Average status of contacts (confirmed ties) (T2)														
	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables (T1)	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	6.65*	(2.46)	[.04]				5.44*	(2.19)	[.04]				4.80†	(2.18)	[.07]
Average status of contacts (confirmed ties)	9.68*	(2.60)	[.01]				8.47*	(2.90)	[.02]				8.09*	(2.77)	[.02]
SSE				.55	(.80)	[.56]	.54	(.72)	[.52]						
TSC										6.43**	(2.76)	[.008]	5.56*	(2.84)	[.02]
CNA				.03	(.03)	[.46]	.02	(.03)	[.58]	.02	(.03)	[.48]	.02	(.03)	[.57]
NBC(C)				−.01	(.01)	[.12]	−.00	(.01)	[.51]	−.03**	(.01)	[.003]	−.02†	(.01)	[.06]
RPM				.49*	(.20)	[.01]	.31	(.22)	[.15]	.42*	(.19)	[.02]	.27	(.21)	[.20]
RME				−.18	(.43)	[.69]	−.08	(.42)	[.87]	−.21	(.46)	[.67]	−.10	(.44)	[.83]
Extraversion				−.25	(.54)	[.67]	−.27	(.60)	[.70]	−.47	(.46)	[.36]	−.46	(.49)	[.40]
Agreeableness				.91	(.72)	[.26]	.83	(.71)	[.29]	.89	(.74)	[.27]	.82	(.72)	[.29]
Conscientiousness				2.25**	(.54)	[.001]	2.08**	(.47)	[.001]	2.26**	(.52)	[.001]	2.12**	(.47)	[.001]
Openness				.53	(.87)	[.55]	.30	(.83)	[.72]	.46	(.85)	[.59]	.26	(.82)	[.76]
Stability				−1.66*	(.56)	[.02]	−1.73*	(.53)	[.02]	−1.61*	(.55)	[.02]	−1.68*	(.51)	[.01]
Female				−.83	(1.69)	[.63]	−1.35	(1.55)	[.41]	−.77	(1.67)	[.65]	−1.25	(1.58)	[.44]
Family income				1.30**	(.43)	[.002]	1.32**	(.46)	[.001]	1.26**	(.36)	[.001]	1.29**	(.40)	[.002]
Need for status				.79	(1.00)	[.43]	.48	(1.05)	[.65]	.90	(1.04)	[.38]	.60	(1.07)	[.57]
Trait dominance				.68	(.88)	[.44]	.81	(.85)	[.33]	.58	(.87)	[.52]	.71	(.84)	[.40]
Self-monitoring				−.16	(.30)	[.60]	−.22	(.30)	[.48]	−.23	(.31)	[.47]	−.27	(.31)	[.41]
Political skill				−1.30	(1.11)	[.27]	−1.25	(1.14)	[.29]	−1.39	(1.10)	[.23]	−1.33	(1.13)	[.26]
Constant	9.24**	(2.05)		−.44	(10.23)		.78	(10.19)		3.41	(9.79)		3.88	(10.17)	
AIC		3529.39			3539.09			3482.31			3532.31			3478.65	
BIC		3573.46			3591.18			3534.39			3584.40			3530.73	

Note. $N = 406$. PSH = perceived status hierarchy; SSE = status self-enhancement; TSC = target status score; CNA = cognitive network accuracy; NBC(C) = network betweenness centrality (confirmed ties); RPM = Raven's progressive matrices; RME = reading the mind in the eyes; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. For readability purposes, we multiply the dependent measure, average status of contacts (confirmed ties) (T2), by 100. Model 1 includes only PSH accuracy (T1) and average status of contacts (confirmed ties) (T1); Models 2 and 4 include all nonstatus control variables and status self-enhancement and individuals' target status score, respectively; Model 3 includes PSH accuracy, all nonstatus control variables, and status self-enhancement; Model 5 includes PSH accuracy, all nonstatus control variables, but using individuals' target status score instead of status self-enhancement.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

viduals tended to underestimate versus overestimate the status of others in general (i.e., perceiver score produced by SRM).

Study 3: PSH Accuracy and Academic Performance in Undergraduates

Study 3 sought to build upon the findings of the previous studies by examining the relationship between PSH accuracy and academic performance, as mediated by the status of individuals' contacts. Participants were 295 undergraduate students (44.1% female) within an Engineering school in East China. Students were assigned to one of eight cohorts by the university administration (29 to 42 students each), and stayed in the same cohort for their entire undergraduate experience. Data were collected midway through the second semester of participants' freshmen year (N = 244, 82.7% response rate).

Measures

Independent variable: PSH accuracy. Measurement and calculation of PSH accuracy was identical to Study 2, except that participants rated each person on both status ("has high status; i.e., is earning the respect and admiration of the other cohort members") and influence ("has a lot of influence over others' thoughts and decisions"; Anderson et al., 2012; Kilduff & Galinsky, 2013) in their cohort, on the same scale as in Study 2. The ratings of status and influence were highly correlated, $r = .75$, $p < .001$.

Mediator: Average status of contacts. The average status of the other cohort-mates that participants sought advice from was measured in the same fashion as in Study 2. On average, participants reported going to 16.85 others for advice ($SD = 9.91$).

Dependent variable: End-of-semester academic performance. Academic performance was assessed by students' semester grade point average (GPA) out of 100, across all courses from that semester.

Control variables. We controlled for participants' status score, status self-enhancement, cognitive network accuracy, emotional intelligence, cognitive intelligence, network betweenness centrality, Big Five personality, and gender as in Study 2. We also included the following variables.

Prior semester GPA. Although students' PSHs were assessed well before their end-of-semester GPA, it is still possible that associations between GPA and PSH accuracy could suffer from some reverse causality. Therefore, we included students' prior-semester GPA as a control variable, so that we effectively examined the extent to which PSH accuracy predicted an improvement in academic performance from one semester to the next.

Machiavellian personality. We controlled for participants' Machiavellianism to examine whether the predicted effects stood independent of individuals' instrumentality in their approach to social interactions. Participants indicated their agreement on 20 statements (e.g., "It is wise to flatter important people"; $\alpha = .64$; Christie & Geis, 1970).

Other characteristics. We controlled for participants' formal status within their cohorts as captured by their student cadre position (1 = *yes*, 0 = *no*), to account for the potential covariance between formal rank and perceptions of hierarchy.[10] We also included participants' roommates' average prior semester GPA, as peer effects of roommates have been shown to influence students' academic achievement (e.g., Sacerdote, 2001).[11]

Results

We again observed moderately high levels of status consensus within groups, $a_{wg} = .66$ (ranging from .60 to .78) across cohorts. Twenty-four participants were excluded from analyses because of missing values for the dependent variable (no GPA; $N = 11$) and/or the mediator (reporting zero advice-seeking contacts or only seeking advice from others who did not answer the status question: $N = 13$).

Table 6 displays descriptive statistics and simple bivariate correlations among variables. Students' academic performance was positively correlated with their status, $r = .29$, $p < .01$, confirming status as an important cue to high performance in this context. Consistent with our predictions, PSH accuracy was positively correlated with the average status of individuals' contacts, $r = .39$, $p < .01$, and academic performance, $r = .19$, $p < .01$. PSH accuracy was also positively related to cognitive network accuracy, $r = .36$, $p < .01$, being female, $r = .17$, $p = .01$, and individuals' prior-semester performance, $r = .17$, $p = .01$.

PSH accuracy and average status of contacts. As in prior studies, we found that individuals were more likely to seek advice from others they believed to be high in status, $r = .35$, $p < .01$. Further, consistent with our prediction, a simple model without controls showed a positive association between PSH accuracy and the average status of the cohort-mates that participants sought advice from (Table 7; Model 1: $b = 18.76$, $p < .01$). This same association existed in models including all nonstatus controls and status self-enhancement (Model 3: $b = 12.32$, $p < .01$), or individuals' actual status instead of status enhancement (Model 5: $b = 12.18$, $p < .01$). We found similar results when using confirmed advice ties rather than advice-seeking ego networks (Table 8; Simple effect, Model 1: $b = 17.11$, $p < .01$; controlling for status enhancement, Model 3: $b = 14.06$, $p = .03$; controlling for individual's status, Model 5: $b = 14.19$, $p = .02$).

Additional exploratory analyses again showed that PSH accuracy was positively related to the average status of participants' top 25% ($b = 21.72$, $p < .01$), and bottom 25% ($b = 15.41$, $p < .01$) of sought-out contacts, and we found it to be negatively related to the total number of others they sought advice from ($b = -13.54$, $p < .01$; pp. 9–10 of the online supplemental materials). This suggests that PSH accuracy may help individuals to form advice-seeking networks made up of fewer but more valuable advice contacts.

PSH accuracy and academic performance. As shown in Model 1 of Table 9, PSH accuracy was positively associated with second semester GPA in a simple model ($b = 3.93$, $p = .02$). This effect was significant in full models including all other nonstatus control variables and status self-enhancement

[10] A cadre position is a formal, high-status role that is unique to China and indicates holding superior positions in authority structures of various institutions and organizations (Lin & Bian, 1991). Student cadres have various responsibilities such as organizing cohort-wide activities, monitoring peer engagement, communicating with the school administration, etc.

[11] Fourteen participants had missing roommates information or had roommates who were not in our sample; in this case, this variable was imputed as the sample mean.

Table 6
Study 3 Bivariate Correlations and Descriptive Statistics

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. PSH accuracy	.52	.31	—																	
2. Female (1 = yes, 0 = no)	.48	.50	.17*	—																
3. Formal status	.29	.46	−.20**	−.10	—															
4. Extraversion	4.38	1.43	−.03	.07	.13*	—														
5. Agreeableness	4.85	.95	.03	.08	−.02	−.20**	—													
6. Conscientiousness	4.75	1.26	−.14*	−.03	.16*	.12†	.08	—												
7. Openness	4.72	1.05	−.11	−.05	.22**	.10	.07	.38**	—											
8. Stability	4.33	1.20	−.21**	−.06	.09	−.07	.19**	.31**	.14*	—										
9. Machiavellianism	3.48	.60	.00	−.25**	.00	−.09	−.13	−.24**	−.16*	−.13†	—									
10. Raven's progressive matrices	9.69	3.10	.05	.14*	.00	.06	.07	.09	.15*	.08	−.20**	—								
11. Reading the mind in the eyes	6.00	1.32	−.05	−.03	−.05	.00	−.08	−.03	−.12†	.03	−.13†	.11	—							
12. Cognitive network accuracy	49.67	18.81	.36**	.16*	.04	.09	−.11	.04	.00	−.05	−.13*	.04	.00	—						
13. Network betweenness centrality	20.99	23.73	−.19**	−.13†	.04	.11†	−.15*	.09	.06	.03	.02	.10	.00	−.30**	—					
14. Status self-enhancement	−.02	.79	.03	−.14*	.02	.13†	.03	.11	.19**	.07	.10	−.09	−.02	.08	−.12†	—				
15. Target status score	.02	.38	.07	.07	.09	.24**	−.09	.18**	.04	−.10	−.22**	.19**	.06	.10	.47**	−.07	—			
16. Average status of contacts	.13	.16	.39**	.05	−.13†	−.09	.11†	.03	.11	−.10	.05	.09	.06	.31**	−.28**	.10	.00	—		
17. Roommates' prior semester performance	74.29	5.18	.17*	.22**	.01	−.01	−.06	−.04	−.01	−.10	.01	−.01	.06	.05	.00	−.05	.04	.22**	—	
18. Prior semester performance	74.93	7.07	.17*	.09	.14*	−.02	−.04	.02	−.01	−.11	−.05	.11†	.04	.21**	.13†	−.01	.27**	.29**	.44**	—
19. End-of-semester performance	76.78	6.40	.19**	.16*	.08	.01	−.06	.02	−.16*	−.13†	−.06	.15*	.02	.14*	.06	−.04	.29**	.22**	.12†	.59**

Note. $N = 220$. PSH = perceived status hierarchy.
$^{\dagger}p < .1$. $^{*}p < .05$. $^{**}p < .01$, two-tailed tests.

(Model 3: $b = 1.66$, $p = .04$), and was marginally significant when controlling for individuals' actual status instead of status self-enhancement (Model 5: $b = 1.58$, $p = .07$).

Indirect effect of average status of participants' contacts. Bootstrapping with 5,000 repetitions revealed significant indirect effects of PSH accuracy on academic performance via the average status of students' contacts in a simple model without controls (95% confidence interval, CI [.53, 2.20]), and in models with all nonstatus controls and status enhancement (95% CI [.04, 1.23]) or individuals' status (95% CI [.02, 1.20]). The indirect effect also remained significant in the models that used confirmed ties instead of advice-seeking ego networks (95% CIs: simple model [.38, 1.76]; with status enhancement and all other controls [.03, 1.12]; with status score and all other controls [.02, 1.11]).

Next, we tested a sequential mediation model that examined whether having higher status contacts facilitates better performance because these contacts are more competent. First, we assessed individuals' competence as the average of their standardized scores for prior-semester GPA, end-of-semester GPA, cognitive intelligence, and emotional intelligence ($\alpha = .66$). Then, we ran a sequential mediation model that tested the indirect effect of PSH accuracy on performance through the average status of participants' contacts, and the average competence of participants' contacts, in serial. This indirect effect was significant (95% CIs: simple model [.24, .50]; with status enhancement and all other controls [.02, .09]; with status score and all other controls [.01, .08]) and also remained significant if using confirmed ties instead of ego-reported advice-seeking ties (95% CIs: simple model: [.11, .27]; with status enhancement and all other controls [.01, .06]; with status score and all other controls [.01, .06]).

Addressing possible reverse causality. Although we did not have longitudinal PSH or network data as in Study 2, we conducted a test of the possible reverse causal relationship between PSH accuracy and the status of individuals' contacts via participants' random housing assignments. As one would expect, students were significantly more likely to report seeking advice from their roommates as compared cohort-mates ($b = .56$, $p < .01$; with MCQAP analysis; Dekker, Krackhardt, & Snijders, 2007). Thus, in effect, these housing assignments represented a random manipulation of a portion of students' advice networks. If students' advice networks drove their PSH accuracy rather than vice versa, we would expect students randomly assigned to live with high-status others to exhibit greater PSH accuracy. However, the average status of students' roommates was not significantly related to their PSH accuracy ($b = .05$, $p = .82$).

Exploratory analyses. We conducted several additional exploratory analyses (see the full results in pp. 11–16 of the online supplementary materials). First, we tested whether individuals' status moderated the effect of PSH accuracy on performance. We found a significant interaction between PSH accuracy and status in a simple model without control variables ($b = 6.85$, $p = .04$), such that PSH accuracy significantly boosted academic performance for high status students (+1 *SD*; $b = 6.43$, $p < .01$) but not low status students (−1 *SD*; $b = 1.11$, $p = .52$); however, this was not significant in a full model with control variables included ($b = 3.39$, $p = .11$). Second, we conducted separate analyses in which 1) PSH accuracy was computed using only ratings of status, 2) PSH accuracy was computed using only ratings of influence, and

Table 7
Study 3 Effects of PSH Accuracy on Average Status of Contacts (Ego-Reported Ties)

	Average status of contacts (ego-reported ties)														
	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	18.76**	(4.11)	[.001]				12.32**	(3.09)	[.009]				12.18**	(3.01)	[.009]
SSE				.42	(1.31)	[.74]	.21	(1.34)	[.88]						
TSC										2.86	(4.81)	[.57]	2.05	(4.60)	[.69]
CNA				.19**	(.06)	[.003]	.11*	(.06)	[.03]	.18**	(.05)	[.003]	.10*	(.05)	[.03]
NBC				−.16*	(.04)	[.03]	−.15†	(.05)	[.06]	−.18*	(.03)	[.01]	−.17*	(.03)	[.02]
RPM				.35	(.35)	[.37]	.26	(.35)	[.48]	.31	(.40)	[.46]	.24	(.40)	[.58]
RME				.88	(.61)	[.20]	1.07	(.61)	[.16]	.86	(.63)	[.22]	1.05	(.63)	[.17]
Extraversion				−.49	(1.23)	[.83]	−.42	(1.16)	[.83]	−.56	(1.23)	[.82]	−.47	(1.16)	[.81]
Agreeableness				2.13	(.90)	[.13]	1.78	(.97)	[.20]	2.11	(.85)	[.12]	1.76	(.93)	[.19]
Conscientiousness				.78	(1.23)	[.51]	1.01	(1.15)	[.32]	.69	(1.19)	[.55]	.94	(1.13)	[.32]
Openness				2.49*	(1.01)	[.04]	2.62*	(1.07)	[.04]	2.61*	(1.22)	[.048]	2.69†	(1.27)	[.05]
Stability				−1.12	(1.07)	[.22]	−.64	(1.06)	[.51]	−.97	(1.17)	[.35]	−.54	(1.18)	[.64]
Machiavellianism				3.78	(2.19)	[.12]	3.56	(2.05)	[.12]	4.14	(2.78)	[.14]	3.80	(2.62)	[.16]
Female				−1.39	(1.66)	[.37]	−1.59	(1.60)	[.30]	−1.54	(1.54)	[.26]	−1.66	(1.47)	[.23]
Formal status				−6.52*	(2.92)	[.03]	−4.86†	(2.66)	[.09]	−6.65*	(3.11)	[.04]	−4.95	(2.90)	[.11]
RPSP				.26	(.27)	[.25]	.15	(.28)	[.56]	.27	(.27)	[.23]	.15	(.28)	[.54]
PSP				.55*	(.19)	[.03]	.51*	(.18)	[.03]	.52†	(.21)	[.06]	.50*	(.20)	[.048]
Constant	3.45†	(2.01)		−91.05**	(13.92)		−85.46**	(18.33)		−89.99**	(15.55)		−84.11**	(19.00)	
AIC		1796.68			1761.54			1746.77			1760.70			1748.27	
BIC		1810.25			1785.29			1770.52			1784.45			1775.42	

Note. $N = 220$. PSH = perceived status hierarchy; SSE = status self-enhancement; TSC = target status score; CNA = cognitive network accuracy; NBC = network betweenness centrality; RPM = Raven's progressive matrices; RME = reading the mind in the eyes; RPSP = roommates' prior semester performance; PSP = Individuals' prior semester performance; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. For readability purposes, we multiply the dependent measure, average status of contacts, by 100. Model 1 includes only PSH accuracy; Models 2 and 4 include all nonstatus control variables and status self-enhancement and individuals' target status score, respectively; Model 3 includes PSH accuracy, all nonstatus control variables and status self-enhancement; Model 5 includes PSH accuracy, all nonstatus control variables, but using individuals' target status score instead of status self-enhancement.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

Table 8
Study 3 Effects of PSH Accuracy on Average Status of Contacts (Confirmed Ties)

	Average status of contacts (confirmed ties)														
	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	17.11**	(3.77)	[.006]				14.06*	(4.37)	[.03]				14.19**	(4.20)	[.02]
SSE				.77	(1.35)	[.59]	.50	(1.16)	[.67]						
TSC										−.32	(5.50)	[.96]	−1.00	(5.22)	[.86]
CNA				.14†	(.06)	[.05]	.06	(.05)	[.24]	.14*	(.06)	[.04]	.06	(.05)	[.24]
NBC(C)				−.11†	(.05)	[.06]	−.11	(.05)	[.10]	−.11*	(.04)	[.04]	−.10	(.04)	[.15]
RPM				.55	(.52)	[.37]	.46	(.52)	[.43]	.53	(.54)	[.39]	.46	(.55)	[.45]
RME				.87	(.52)	[.14]	1.07†	(.49)	[.09]	.89	(.51)	[.13]	1.09†	(.49)	[.08]
Extraversion				.12	(1.45)	[.94]	.20	(1.38)	[.89]	.21	(1.43)	[.92]	.29	(1.34)	[.86]
Agreeableness				2.50	(1.60)	[.20]	2.08	(1.68)	[.28]	2.54	(1.57)	[.18]	2.11	(1.66)	[.27]
Conscientiousness				.53	(1.59)	[.74]	.76	(1.50)	[.62]	.57	(1.62)	[.75]	.81	(1.52)	[.59]
Openness				2.01*	(.86)	[.02]	2.19*	(.84)	[.02]	2.12*	(.81)	[.01]	2.25*	(.81)	[.01]
Stability				−1.27	(1.11)	[.24]	−.71	(1.03)	[.47]	−1.25	(1.21)	[.29]	−.73	(1.15)	[.52]
Machiavellianism				4.06*	(1.46)	[.01]	3.87*	(1.19)	[.01]	4.17*	(1.85)	[.02]	3.87*	(1.55)	[.02]
Female				−5.30*	(2.14)	[.046]	−5.70*	(2.37)	[.049]	−5.44*	(2.07)	[.03]	−5.78*	(2.28)	[.02]
Formal status				−3.99	(2.85)	[.17]	−2.21	(2.86)	[.48]	−4.07	(2.88)	[.17]	−2.24	(2.92)	[.49]
RPSP				.52	(.29)	[.16]	.42	(.28)	[.16]	.52	(.28)	[.15]	.42	(.26)	[.16]
PSP				.67**	(.26)	[.006]	.64**	(.24)	[.003]	.68**	(.27)	[.006]	.65**	(.25)	[.003]
Constant	8.67**	(3.09)		−115.80**	(14.40)		−112.05**	(18.02)		−117.63**	(17.79)		−113.79**	(20.23)	
AIC		1848.56			1827.63			1813.61			1829.92			1813.67	
BIC		1862.11			1851.35			1837.34			1857.03			1837.39	

Note. $N = 219$. PSH = perceived status hierarchy; SSE = status self-enhancement; TSC = target status score; CNA = cognitive network accuracy; NBC(C) = network betweenness centrality (confirmed ties); RPM = Raven's progressive matrices; RME = reading the mind in the eyes; RPSP = roommates' prior semester performance; PSP = individuals' prior semester performance; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. For readability purposes, we multiply the dependent measure, average status of contacts, by 100. Model 1 includes only PSH accuracy; Models 2 and 4 include all nonstatus control variables and status self-enhancement and individuals' target status score, respectively; Model 3 includes PSH accuracy, all nonstatus control variables and status self-enhancement; Model 5 includes PSH accuracy, all nonstatus control variables, but using individuals' target status score instead of status self-enhancement.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

Table 9
Study 3 Effects of PSH Accuracy on Academic Performance

	End-of-semester performance														
	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	3.93*	(1.39)	[.02]				1.66*	(.67)	[.04]				1.58†	(.71)	[.07]
SSE				.02	(.46)	[.96]	−.01	(.44)	[.99]						
TSC										1.54†	(.70)	[.09]	1.47	(.68)	[.11]
CNA				.04**	(.01)	[.001]	.02†	(.01)	[.08]	.03*	(.01)	[.03]	.02	(.01)	[.21]
NBC				.02*	(.01)	[.049]	.02†	(.01)	[.07]	.00	(.01)	[.60]	.00	(.01)	[.63]
RPM				.03	(.10)	[.81]	.02	(.10)	[.89]	.01	(.09)	[.88]	.00	(.10)	[.96]
RME				−.19	(.26)	[.50]	−.16	(.26)	[.55]	−.20	(.26)	[.50]	−.17	(.26)	[.54]
Extraversion				−.07	(.07)	[.35]	−.06	(.07)	[.44]	−.13	(.10)	[.26]	−.11	(.09)	[.29]
Agreeableness				−.12	(.29)	[.64]	−.18	(.32)	[.56]	−.15	(.28)	[.57]	−.20	(.31)	[.51]
Conscientiousness				.11	(.18)	[.57]	.15	(.19)	[.50]	.06	(.16)	[.67]	.10	(.17)	[.57]
Openness				−.27	(.32)	[.42]	−.26	(.33)	[.44]	−.24	(.26)	[.37]	−.24	(.27)	[.40]
Stability				−.30	(.22)	[.22]	−.23	(.23)	[.37]	−.23	(.20)	[.33]	−.17	(.22)	[.50]
Machiavellianism				.08	(.64)	[.91]	.05	(.58)	[.93]	.23	(.62)	[.69]	.19	(.56)	[.73]
Female				.91	(.90)	[.29]	.87	(.86)	[.29]	.89	(.78)	[.24]	.86	(.75)	[.24]
Formal status				.08	(.70)	[.90]	.31	(.78)	[.69]	.06	(.72)	[.94]	.28	(.79)	[.73]
RPSP				−.02	(.09)	[.86]	−.03	(.09)	[.73]	−.02	(.09)	[.83]	−.03	(.09)	[.73]
PSP				.68**	(.07)	[.0006]	.67**	(.07)	[.0002]	.66**	(.07)	[.001]	.66**	(.07)	[.0005]
Constant	74.76**	(1.55)		28.15*	(11.38)		28.77*	(11.19)		29.94**	(11.46)		30.52**	(11.36)	
AIC		1392.57			1196.91			1193.28			1192.86			1189.52	
BIC		1406.15			1220.67			1217.04			1216.62			1213.28	

Note. $N = 220$. PSH = perceived status hierarchy; SSE = status self-enhancement; TSC = target status score; CNA = cognitive network accuracy; NBC = network betweenness centrality; RPM = Raven's progressive matrices; RME = reading the mind in the eyes; RPSP = roommates' prior semester performance; PSP = individuals' prior semester performance; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. Model 1 includes only PSH accuracy; Models 2 and 4 include all nonstatus control variables and status self-enhancement and individuals' target status score, respectively; Model 3 includes PSH accuracy, all nonstatus control variables and status self-enhancement; Model 5 includes PSH accuracy, all nonstatus control variables, but using individuals' target status score instead of status self-enhancement.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

3) individuals' tendencies to under versus overestimate the status of others in general was included as an additional control. We found that the majority of our predicted effects remained unchanged.

Discussion

Study 3 provided further support for our predictions. Students who had more accurate perceptions of the status hierarchies within their cohorts sought advice from higher status others on average, thereby elevating their performance. This was true above and beyond students' cognitive intelligence and emotional recognition skills, accuracy in perceiving the social networks in their cohorts, Big Five personality and Machiavellianism.

Study 4: PSH Accuracy and Job Performance

Study 4 aimed to extend the prior studies in two main ways. First, we moved outside the university context and tested whether PSH accuracy predicted the social networks and performance of working adults. Status dynamics in the workplace may differ from those of student groups, and job performance may be substantially different from academic performance, so it was important to test generalizability. Second, we assessed the accuracy of participants' cognitive social networks via their perceptions of interpersonal alliances rather than advice exchange relations. Interpersonal alliances may represent stronger relationships that hold greater importance in determining influence, information flow, and politics within groups, thus we wanted to test whether the predicted effects of PSH accuracy would remain even when individuals' accuracy in perceiving these potentially stronger ties was accounted for.

Participants were 139 full-time employees from two medium-sized research and development (R&D) firms in the automotive industry in East China (Firm 1: five departments (R&D, production, marketing, finance, and human resource); $N = 85$, 85.9% response rate, 32.9% female, $M_{age} = 30.08$, $SD_{age} = 7.34$, $M_{tenure} = 30.74$ months, $SD_{tenure} = 33.29$, departments ranged from 4 to 31 employees; Firm 2: one R&D department; $N = 54$, 94.7% response rate, 37.04% female, $M_{age} = 32.48$, $SD_{age} = 6.52$, $M_{tenure} = 58.42$ months, $SD_{tenure} = 42.39$).

Measures

Independent variable: PSH accuracy. Because of the high correlation between status and influence in Study 3, in addition to a desire for brevity, we combined status and influence into one measure, using the same definitions and same scale as in Study 3.[12] The calculation of PSH accuracy was identical to Studies 2 and 3, and there was again a moderately high level of accuracy on average, with significant variance across participants ($M = .51$, $SD = .33$).

Mediator: Average status of contacts. The average status of the individuals that participants sought contact with was measured in similar fashion to prior studies. The only difference was that we asked three questions related to advice seeking, learning, and interpersonal alliances, to more comprehensively capture employees' networking behaviors. Participants were provided with the list of employees in their department, and asked "do you ask this person questions related to work?", "is this person someone you seek to learn from and model yourself after?", and "do you see this person as an 'ally,' or someone whose support you can depend on, in the organization?" (1 = *yes*, 0 = *no*; consistent with prior research, we coded these alliance ties as existing only if they were confirmed by the other party given their reciprocal nature (White & Houseman, 2002); number of others that participants reported going to for advice: $M = 22.99$, $SD = 15.75$; seeking to learn from: $M = 23.36$, $SD = 17.56$; and having alliances with: $M = 18.12$, $SD = 9.39$). There was substantial overlap across these three networks ($\alpha = .62$) and so we measured the average status of contacts as the overall average of the average status levels of their contacts within their reported advice, learning, and alliance networks. Analyses using only the advice-seeking and/or learning network questions to construct our mediator so as to be more consistent with prior studies yielded similar results (see the full results in pp. 21–23 of the online supplementary materials).

Dependent variable: Manager-rated job performance. Managers rated their employees' job performance with four items (e.g., "excellent overall level of performance and effectiveness"; 1 = *strongly disagree* to 7 = *strongly agree*; $\alpha = .89$; Wayne & Liden, 1995).

Control variables. Status score, status self-enhancement, cognitive intelligence, emotion recognition, self-monitoring, political skill, and Big Five personality were measured in the same way as before. We also controlled for the following variables.

Cognitive network accuracy. Participants indicated their perceptions of the interpersonal alliances within a randomly chosen subset of employees (Firm 1: 10 employees, 45 ties; Firm 2: 12 employees, 66 ties), and cognitive network accuracy was computed in in the same way as in Studies 2 and 3.[13]

Network position. Betweenness centrality was computed in the same fashion as Studies 2 and 3, for advice seeking, learning, and interpersonal alliances, and these were combined into one overall measure ($\alpha = .74$).

Individual and job characteristics. We controlled for participants' gender, age, tenure, and formal status in terms of job level (Firm 1: *primary*, *intermediate*, *advanced*; Firm 2: *primary*, *advanced*), to account for the potential covariance between these variables and perceptions of hierarchy or performance.

Results and Discussion

We observed an average $a_{wg} = .60$ (ranging from .34 to .83) for status ratings across departments, again indicating that there was moderate but nonperfect status consensus within these groups. We excluded all four participants in the HR department in Firm 1, in which we observed no reliable target effect of status, as well as participants who reported having no contacts ($N = 5$) and participants who did not complete our control variables ($N = 9$).

[12] We acknowledge that incorporating influence into our status measure in this work setting might also tap into the dominance or power hierarchy. However, as noted, participants were provided the definition of status, "the extent to which an individual is respected and admired by others in his or her group," so as to assess the prestige-based status hierarchy. Further, we controlled for formal rank as described below.

[13] For the department with less than ten employees, participants indicated their perceptions of the interpersonal alliances between all dyads within the department. Participants' cognitive accuracy scores were transformed to the same scale, ranging from 0 to 45.

Table 10 displays correlations among variables. As in Study 3, status and performance were moderately correlated, $r = .36$, $p < .01$, consistent with status as an important cue to high performance, yet a separate factor. Also, status was moderately positively correlated with formal rank, $r = .48$, $p < .01$. Consistent with our hypotheses, PSH accuracy was positively correlated with the average status of participants' contacts, $r = .44$, $p < .01$, and their manager-rated job performance, $r = .42$, $p < .01$. PSH accuracy was also positively related to cognitive intelligence, $r = .17$, $p = .06$, and cognitive network accuracy, $r = .25$, $p < .01$, and negatively related to betweenness centrality, $r = -.25$, $p < .01$.

PSH accuracy and average status of contacts. As in prior studies, we found that individuals were more likely to seek out connections with those they personally believed to be high in status, $r = .34$, $p < .01$. Consistent with our prediction, PSH accuracy was positively related to the average status of employees' contacts in a simple model with no controls (Table 11; Model 1: $b = 18.74$, $p = .06$), and in models with all nonstatus controls and status self-enhancement (Model 3: $b = 17.56$, $p = .01$), or individuals' actual status instead of status self-enhancement (Model 4: $b = 18.56$, $p = .02$).

As in prior studies, PSH accuracy was related to greater contact with especially high status others (i.e., the status of participants' top 25% of contacts; $b = 21.21$, $p = .08$), but not reduced contact with especially low status others (i.e., bottom 25%; $b = 14.36$, $p = .20$). We also found that PSH accuracy negatively related to the number of people they reported contact with (outdegree centrality; $b = -12.50$, $p = .02$; see pp. 17–18 of the online supplemental materials).

PSH accuracy and job performance. As shown in Table 12, PSH accuracy was positively associated with job performance in a simple model with no controls (Model 1: $b = 1.11$, $p = .04$). This association remained significant with all nonstatus control variables and status self-enhancement included (Model 3: $b = 1.25$, $p = .02$) and when controlling for individuals' status instead of their status enhancement (Model 5: $b = 1.15$, $p = .01$). Cognitive intelligence was also a significant predictor of job performance.

It is also worth noting that we did not find a significant effect of cognitive network accuracy on performance, irrespective of controlling for PSH accuracy. This suggests that at least in this context, accurate perceptions of the status hierarchy may be more critical to performance than accurate perceptions of dyadic alliances.

Indirect effect of average status of participants' contacts. Bootstrapping with 5,000 repetitions revealed significant indirect effects of PSH accuracy on job performance via the average status of employees' contacts in a simple model without controls (95% CI [.05, .38]), as well as in models with all nonstatus controls and status enhancement (95% CI [.10, .54]), or individuals' actual status (95% CI [.14, .61]).

As in Study 3, we also tested whether higher status contacts facilitated better performance because these contacts are more competent. We examined a sequential mediation model based upon a composite measure of individuals' competence as the average of their standardized job performance, cognitive intelligence, and emotional intelligence scores ($\alpha = .41$). The indirect effect of PSH accuracy on performance through the average status of participants' contacts, and the average competence of participants' contacts, in serial, was significant (95% CIs: simple model

Table 10
Study 4 Bivariate Correlations and Descriptive Statistics

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. PSH accuracy	.51	.33	—																		
2. Female	.36	.48	.08	—																	
3. Age	30.55	6.84	.07	−.04	—																
4. Tenure	38.94	35.87	−.09	.02	.41**																
5. Job level	1.47	.63	−.07	.05	.22*	.35**	—														
6. Extraversion	4.39	1.35	−.01	−.18†	−.04	.11	.08	—													
7. Agreeableness	4.71	.91	.09	.14	.04	−.04	−.07	−.21*	—												
8. Conscientiousness	5.64	1.23	.13	.04	.20*	.07	.02	.21**	.27**	—											
9. Openness	5.17	1.20	.11	−.05	.06	.09	.04	.31**	.07	.46**	—										
10. Stability	5.02	1.26	.07	−.08	.13	−.04	−.05	.18*	.25**	.55**	.39**										
11. Raven's progressive matrices	8.23	3.91	.17†	.11	−.01	.00	.01	−.20*	.13	.20*	.13	.03	—								
12. Reading the mind in the eyes	5.83	1.64	.14	.15†	−.07	−.01	−.05	−.06	.01	−.04	−.03	−.04	.11	—							
13. Self-monitoring	11.55	4.05	−.13	−.08	−.14	.07	−.02	.28**	−.23*	.00	.23*	.08	−.02	−.02	—						
14. Political skill	4.92	.74	.02	.08	.11	.20*	.15	.26**	−.14	.30**	.35**	.22*	.08	.03	.42**	—					
15. Cognitive network accuracy	24.71	8.01	.25**	.06	−.10	.09	.06	.10	−.01	.09	.05	−.05	.06	.26**	−.16†	−.05	—				
16. Network betweenness centrality	14.44	19.13	−.25**	.10	.10	.34**	.35**	.01	−.10	−.10	−.08	.08	.00	.12	.06	.12	.00	—			
17. Status self-enhancement	.02	.95	.08	−.04	.03	.13	.05	.22*	−.12	.08	.25**	.00	.03	−.04	.32**	.20*	−.18*	−.08	—		
18. Target status score	−.07	.49	.08	.07	.29**	.23*	.48**	−.02	−.06	.13	−.03	−.01	.26**	.03	.00	.10	−.01	.32**	−.21*	—	
19. Average status of contacts	.12	.16	.44**	.22*	−.09	−.02	−.05	.05	.10	.08	.08	−.09	.01	.03	−.08	−.09	.20*	−.34**	.08	−.12	—
20. Manager rated job performance	5.24	.88	.42**	.16†	−.08	−.05	.12	.00	−.01	.06	−.01	.03	.27**	.02	−.05	−.02	.07	.10	.04	.36**	.33**

Note. $N = 121$. PSH = perceived status hierarchy.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

Table 11
Study 4 Effects of PSH Accuracy on Average Status of Contacts

	Average status of contacts														
	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	18.74†	(3.65)	[.06]				17.56*	(6.04)	[.01]				18.56*	(7.04)	[.02]
SSE				1.30	(1.00)	[.33]	.45	(1.14)	[.75]						
TSC										−1.66	(3.76)	[.70]	−3.39	(3.14)	[.35]
CNA				.20	(.20)	[.55]	.09	(.15)	[.60]	.16	(.20)	[.62]	.07	(.14)	[.70]
NBC				−.27†	(.11)	[.09]	−.23†	(.10)	[.097]	−.27	(.10)	[.11]	−.21†	(.10)	[.09]
RPM				−.11	(.29)	[.69]	−.33	(.30)	[.39]	−.04	(.35)	[.90]	−.22	(.36)	[.52]
RME				.65	(1.54)	[.67]	−.10	(1.76)	[.95]	.71	(1.51)	[.65]	−.12	(1.86)	[.94]
Self-monitoring				−.20	(.23)	[.35]	.06	(.21)	[.79]	−.11	(.22)	[.66]	.13	(.28)	[.72]
Political skill				−3.01	(2.90)	[.22]	−3.01†	(2.94)	[.05]	−3.13	(2.81)	[.22]	−3.17†	(2.94)	[.08]
Extraversion				.55	(1.42)	[.74]	.82	(1.34)	[.49]	.65	(1.39)	[.69]	.87	(1.30)	[.45]
Agreeableness				.03	(1.69)	[.99]	.52	(1.56)	[.72]	−.09	(1.59)	[.97]	.42	(1.47)	[.75]
Conscientiousness				.42	(1.10)	[.82]	.87	(1.12)	[.40]	.57	(1.07)	[.59]	1.15	(1.20)	[.24]
Openness				.82	(1.84)	[.68]	.58	(1.85)	[.73]	.93	(1.72)	[.63]	.47	(1.64)	[.75]
Stability				−.49	(1.06)	[.61]	−1.14	(1.29)	[.31]	−.65	(1.05)	[.48]	−1.33	(1.43)	[.27]
Female				6.89†	(5.84)	[.06]	7.11†	(6.16)	[.09]	6.95*	(5.66)	[.04]	7.20†	(6.09)	[.06]
Age				−.15	(.21)	[.40]	−.28*	(.22)	[.02]	−.12	(.19)	[.47]	−.23*	(.20)	[.02]
Tenure				.07	(.06)	[.19]	.06†	(.06)	[.098]	.07	(.06)	[.17]	.06*	(.06)	[.047]
Formal status				1.82	(1.73)	[.44]	1.41	(1.45)	[.32]	2.48	(.99)	[.18]	2.47*	(.61)	[.04]
Constant	3.90	(2.91)		17.26	(14.82)		15.36	(9.37)		14.53	(14.49)		11.38	(8.52)	
AIC		988.34			977.65			962.17			978.24			961.00	
BIC		999.52			988.84			973.35			989.42			972.18	

Note. $N = 121$. PSH = perceived status hierarchy; SSE = status self-enhancement; TSC = target status score; CNA = cognitive network accuracy; NBC = network betweenness centrality; RPM = Raven's progressive matrices; RME = reading the mind in the eyes; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. For readability purposes, we multiply the dependent measure, average status of contacts, by 100. Model 1 includes only PSH accuracy; Models 2 and 4 include all nonstatus control variables and status self-enhancement and individuals' target status score, respectively; Model 3 includes PSH accuracy, all nonstatus control variables and status self-enhancement; Model 5 includes PSH accuracy, all nonstatus control variables, but using individuals' target status score instead of status self-enhancement.
$^{\dagger}p < .1$. $^{*}p < .05$. $^{**}p < .01$, two-tailed tests.

[.05, .15]; with status enhancement and all other controls [.06, .20]; with status score and all other controls [.05, .19]).

Additional explorative analyses. We conducted several additional exploratory analyses (see the full results in pp. 19–20 of the online supplementary materials). First, we did not find a significant interaction between PSH accuracy and status on job performance in either a simple model ($b = -.43$, $p = .69$) or a full model with control variables included ($b = -.04$, $p = .96$). Second, we tested the interactive and indirect effects via political skill. We did not find consistent support for an indirect effect via political skill or an interaction between political skill and PSH accuracy. Finally, we again included individuals' tendencies to under versus overestimate the status of others in general as an additional control and found the majority of our predicted effects remained unchanged.

Taken together, Study 4 provided further evidence for a positive effect of PSH accuracy on performance via increased contact with high status others, replicating the findings from Study 3 in a sample of working adults.

General Discussion

Across four studies, one of MBA student cohorts, two of undergraduate student cohorts, and the last of full-time employees in R&D firms, we examined individuals' perceived status hierarchies and their consequences. We found substantial variation in PSHs, and that PSH accuracy was positively associated with both academic and job performance. Specifically, our findings suggest that PSH accuracy helps individuals perform at a higher level by helping them to seek out contact with others of higher average status. These results existed above and beyond individuals' network positions, network perceptions, intelligence factors, personality traits, and other characteristics.

Theoretical Contributions

Our findings make a number of important contributions. First, we contribute to research on social hierarchy. We build upon recent work that highlights the subjective, ambiguous, and potentially conflictual nature of status (Bendersky & Hays, 2012; Hays & Bendersky, 2015; Kilduff, Willer, et al., 2016) by showing that there is substantial variation in individuals' subjective representations of status hierarchies, and the accuracy of those representations. This represents a significant extension of status characteristics theory, which has generally assumed sufficient consensus as to preclude the study of individual perceptions. Identifying individual variation in PSHs also raises important questions about what drives that variation and opens the door to exploring the role of both actor and relationship effects in status assessments (Kenny, 1995; West & Kenny, 2011), extending existing work that has focused almost exclusively on target characteristics. Our findings on the benefits of PSH accuracy also reveal a new way in which status dynamics can affect the outcomes of indi-

Table 12
Study 4 Effects of PSH Accuracy on Job Performance

	Job performance														
	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
PSH accuracy	1.11*	(.22)	[.04]				1.25*	(.44)	[.02]				1.15*	(.33)	[.01]
SSE				.08	(.10)	[.40]	.01	(.12)	[.93]						
TSC										.64†	(.30)	[.06]	.53†	(.30)	[.09]
CNA				.00	(.01)	[.99]	−.01	(.01)	[.50]	−.00	(.01)	[.95]	−.01	(.01)	[.60]
NBC				.01	(.00)	[.27]	.01	(.00)	[.22]	.00	(.00)	[.24]	.01	(.00)	[.19]
RPM				.06*	(.01)	[.02]	.05*	(.01)	[.03]	.04†	(.01)	[.05]	.03†	(.01)	[.06]
RME				.01	(.06)	[.92]	−.04	(.07)	[.55]	.00	(.05)	[.92]	−.04	(.06)	[.42]
Self-monitoring				−.02	(.01)	[.21]	−.00	(.01)	[.96]	−.02*	(.00)	[.02]	−.01	(.00)	[.46]
Political skill				−.13	(.09)	[.22]	−.12†	(.07)	[.07]	−.09	(.07)	[.22]	−.10	(.07)	[.15]
Extraversion				.02	(.06)	[.74]	.04	(.08)	[.71]	.03	(.05)	[.55]	.04	(.06)	[.56]
Agreeableness				−.09	(.13)	[.49]	−.07	(.10)	[.57]	−.09	(.14)	[.55]	−.06	(.12)	[.73]
Conscientiousness				.00	(.04)	[.91]	.04†	(.02)	[.08]	−.04	(.04)	[.46]	.00	(.02)	[.98]
Openness				−.04	(.05)	[.37]	−.06	(.06)	[.31]	−.00	(.06)	[.95]	−.03	(.07)	[.64]
Stability				.06	(.08)	[.48]	.02	(.05)	[.73]	.08	(.06)	[.44]	.04	(.03)	[.24]
Female				.20	(.10)	[.11]	.18	(.12)	[.19]	.18*	(.09)	[.02]	.18*	(.12)	[.02]
Age				−.01	(.01)	[.46]	−.02†	(.00)	[.06]	−.02*	(.01)	[.04]	−.03*	(.01)	[.03]
Tenure				−.00	(.00)	[.92]	−.00	(.00)	[.84]	−.00	(.00)	[.95]	−.00	(.00)	[.87]
Formal status				.23*	(.11)	[.02]	.19*	(.07)	[.03]	.03	(.12)	[.82]	.03	(.09)	[.73]
Constant	4.68**	(.18)		5.59**	(1.26)		5.51**	(1.08)		6.20**	(1.21)		6.05**	(.94)	
AIC		296.26			294.52			271.60			283.36			261.78	
BIC		307.44			305.71			282.78			294.54			272.96	

Note. $N = 121$. PSH = perceived status hierarchy; SSE = status self-enhancement; TSC = target status score; CNA = cognitive network accuracy; NBC = network betweenness centrality; RPM = Raven's progressive matrices; RME = reading the mind in the eyes; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion. Unstandardized coefficients. Robust *SE*s in parentheses. Score wild cluster bootstrap *p* values in square brackets. Model 1 includes only PSH accuracy; Models 2 and 4 include all nonstatus control variables and status self-enhancement and individuals' target status score, respectively; Model 3 includes PSH accuracy, all nonstatus control variables and status self-enhancement; Model 5 includes PSH accuracy, all nonstatus control variables, but using individuals' target status score instead of status self-enhancement.
† $p < .1$. * $p < .05$. ** $p < .01$, two-tailed tests.

viduals, extending research that has primarily focused on the benefits of high status (Marmot, 2004; Savin-Williams, 1979).

Second, this research makes an important contribution by connecting the status and social networks literatures. Although both have a long history of examining the informal social structure of groups, they have traditionally been pursued independently, with only a few exceptions (e.g., Flynn et al., 2006; Kilduff, Crossland, et al., 2016). We connect these areas by showing that individuals' PSHs influence who they form network contacts with, thus revealing a new determinant of groups' social networks (e.g., Kammrath, Armstrong, et al., 2019). Our findings also extend existing work on the importance of the status of individuals' network contacts (e.g., Kilduff & Krackhardt, 1994; Lin, 1999).

Third, our findings provide new answers to age-old questions on the determinants of high performance and success in groups and organizations, by showing the critical role of individuals' perceptions of groups' status hierarchies. From a practical standpoint, individuals looking to succeed might actively seek out accurate status information upon entering new groups, perhaps by making a conscious effort to pay attention to interpersonal dynamics in group meetings, consulting with other members to assess whom they most look up to, and asking for the advice of others when selecting a mentor. The idea that accurate perception of informal social structure is important is not new (Krackhardt, 1990); however, empirical work examining the effects of accuracy in perceiving dyadic ties is still limited (Brands, 2013). Here we find that accurate perception of groups' status hierarchies in particular is important to individuals' performance. This contributes to the large literatures on the determinants of both job (Greenhaus et al., 1990; Judge & Ilies, 2002) and academic (Park & Kerr, 1990; Poropat, 2009) performance.

It is important to also consider how the dynamics we observed could have undesirable implications at the group and societal levels of analysis. In particular, is possible that individuals who have different cultural or functional backgrounds from the majority of other group members might suffer from reduced PSH accuracy, perhaps because of discrepant beliefs about the characteristics that are more or less valuable, as well as any ingroup advantage associated with accurately perceiving status dynamics (such an ingroup advantage has been observed for recognition of emotions; Elfenbein & Ambady, 2002). Thus, PSH inaccuracy could represent an obstacle to the integration and success of minority group members (Duguid, Loyd, & Tolbert, 2012), perpetuating unjust societal differences in their outcomes as compared with majority group members (Kay et al., 2009; Pratto, Sidanius, Stallworth, & Malle, 1994). Further, given the importance of minority opinions, these dynamics could impede group creativity and decision-making (Phillips, 2003; Wood, Lundgren, Ouellette, Busceme, & Blackstone, 1994).

More generally, we do not mean to conclude that individuals *should* always seek out contact with the higher status members of their groups and avoid contact with the lower status members of their groups. Although this may benefit their own performance within the

group on average, there could be exceptions, and this dynamic could be detrimental when aggregated up to the group level, if it means that valuable minority opinions go unheard or that deserving lower status members face greater challenges to ascending the hierarchy. Ultimately, the answers to these questions surrounding the broader consequences of our findings may depend in part upon the extent to which a given group's status hierarchy is meritocratic (or, prestige-based), just as the benefits of hierarchy in general have been argued to depend on meritocracy of the hierarchy (Anderson & Willer, 2014). In groups with highly meritocratic hierarchies, such that competence and performance are rewarded independent of demographics and other potentially irrelevant cues, it may generally be functional for members to imitate, learn from, and ask advice from higher status members. However, in groups with less meritocratic hierarchies, the downsides we have just highlighted will become more pressing. We see these potentially undesirable implications as an important final contribution, both theoretically in terms of identifying a new obstacle for the success of minority individuals, and practically in terms of what group leaders may need to focus on to promote the success of these individuals.

Limitations and Future Directions

The current studies represent an initial investigation into individuals' perceived status hierarchies, a topic that warrants additional research. One important next step would be to explore potential moderators and boundary conditions. In particular, these dynamics may be very different in groups with dominance-based status hierarchies, in which status is attained via intimidation rather than competence or value provided to the group (Cheng et al., 2010, 2013). First, in such groups, there might be less variance in PSH accuracy, because dominance-based status may be more outwardly visible through behaviors like coercion and intimidation. Second, rather than seeking out contact with high status others, individuals might instead rely on their PSHs to avoid aggressive or abusive high status others, at least during certain times of conflict or tension. Third, contact with high status others would be unlikely to provide the learning benefits that it does in groups with prestige hierarchies. That said, accurate knowledge of the hierarchy might still help individuals to ingratiate themselves to high-ranking others and thus avoid costly confrontations with them, and still potentially enable them to indirectly wield influence.

A second important potential moderator that future work should examine is culture. The prevalence and importance of status is widespread (Anderson et al., 2015; Henrich & Gil-White, 2001), existing in most if not all social species as well as all human cultures. However, the importance placed on formal authority structures is a dimension along which cultures vary (Hofstede, 1980), and it is possible that more informal status dynamics might matter less (and there might be reduced variance in PSH accuracy across individuals) in cultures in which formal authority is more universally acknowledged and powerful in driving patterns of influence and communication. Further, although the benefits of connections to high status others for career success have been observed across various cultural contexts (e.g., Bian & Ang, 1997; Kilduff, Crossland, et al., 2016; Lin et al., 1981), research has identified certain cultural differences with respect to status (e.g., Kuwabara, Yu, Lee, & Galinsky, 2016; see Li, Chen, & Blader, 2016 for a brief review) that might affect the consequences of PSH accuracy.

Other moderators could include individual traits and goals, and the nature of the task. As one example, an individual might have a perfect sense of the status hierarchy within his group, but if he is unmotivated to learn, improve, or succeed, he may not seek to form ties with high status others or to imitate them, thus failing to leverage the advantages provided by his accurate PSH. Therefore, need for achievement (Phillips & Gully, 1997) might prove to be an important moderator of our findings. Or, an accurate PSH might be most beneficial when one needs task-relevant advice or help, and less so when connections with high status others are less relevant to one's goals (e.g., when seeking emotional support with personal issues).

Moving beyond moderators and potential boundary conditions, a second important direction for future work is to investigate the antecedents of PSH accuracy. Among other things, PSH accuracy could reflect individual variance in: (a) beliefs about the value of various characteristics, (b) certain social perceptual skills, (c) position, and (d) motivation. We touched above upon some of the possible implications of the first factor; it is also possible that groups could reduce variance in beliefs by more clearly illustrating and communicating what the group values. Regarding the second factor, future research should examine if there are reliable differences across individuals in their PSH accuracy across multiple groups, which would suggest that PSH accuracy is at least partly determined by dispositional differences and perhaps even represents a unique ability factor. This research could also dig deeper into any possible relationships between this potential "status intelligence," and additional aspects of emotional intelligence or other social skills not captured by our current set of control variables. Although existing work on "social intelligence" has failed to make a lot of headway in reliably identifying and measuring the factors that it encompasses (Landy, 2006), it remains possible that accurate PSHs represent one facet of a broader set of social or group-related abilities. Regarding the third factor, positions that make it easier or harder to observe group-level status dynamics could help determine PSH accuracy. In Studies 2–4, we observed a negative correlation between PSH accuracy and network betweenness centrality (S2: $r = -.16$, $p < .01$; S3: $r = -.19$, $p < .01$; S4: $r = -.25$, $p < .01$), suggesting that individuals occupying brokerage-type network positions are less accurate in perceiving status hierarchies. One possible explanation for this is that brokering between disconnected others can be cognitively taxing and psychologically burdensome (Carboni & Gilman, 2012), thus potentially reducing the cognitive resources that brokers have available for forming accurate representations of their groups' status hierarchies. Future research might test if other types of positions help or impede individuals in accurately perceiving status hierarchies. Regarding the fourth factor, the motivation to accurately perceive the social hierarchy in one's group may vary by individuals and contexts. For example, in Study 2 we observed that individuals' need for status was positively related to PSH accuracy, $r = .12$, $p = .02$. Future studies could test if other hierarchy-related motivations, such as desire for prestige and dominance (Case, Bae, & Maner, 2018) or social dominance orientation (Ho, Sidanius, et al., 2015), shape individuals' accuracy in discerning status differences. Relatedly, it would also be interest-

ing to investigate the cues that people rely on in making status assessments, and which cues facilitate greater PSH accuracy.

Third, future work could seek even greater causal evidence of the effects of PSH accuracy, perhaps by assessing the PSHs of individuals entering new groups and following their networking behaviors and performance over multiple time points. Doing so would also allow for examination of the interplay between individuals' PSHs and changing hierarchies (e.g., Bendersky & Shah, 2013); for example, it could be that individuals with more accurate PSHs are also more aware of when hierarchies are changing, or might even anticipate such changes before they have fully occurred. Of course, this would be time and cost intensive and would require a field context in which a significant cohort of newcomers was joining an established group. Indeed, concerns about causality apply to the majority of network research because of these challenges (Brands & Kilduff, 2014; Kilduff, Crossland, Tsai, & Krackhardt, 2008; Mouw, 2006).

Fourth, future work could examine additional possible mediators for the link between PSH accuracy and performance. One possibility might be the avoidance of costly norm violations. For example, if two other group members are in a disagreement, an individual with an accurate PSH will have a good sense of the relative status of these two individuals, which may lead her to avoid inadvertently challenging the group's status hierarchy by supporting the lower status individual. It would also be interesting to examine the nature of the interactions that occur between individuals and their advice contacts, whether this varies as a function of PSH accuracy, and whether certain forms of contact with high status others provide greater benefits than others (e.g., explicit mentorship vs. passive observation).

We conducted one set of post-hoc exploratory analyses that begin to address these questions and the broad idea that PSH accuracy may help individuals to interact with other group members in ways commensurate with their status, which could in turn reduce norm violations and improve quality of relationships. Specifically, we examined the association between PSH accuracy and the extent to which individuals' self-reported advice-seeking ties were confirmed. That is, if person A reports seeking advice and to learn from person B, does person B confirm that he/she provides this advice and mentorship to person A, and is that likelihood affected by A's PSH accuracy? We conducted a meta-analysis to answer this question, across Studies 2–4, and using the dyadic tie as the unit of analysis (see the full results in p. 26 of the online supplementary materials). We found that PSH accuracy was positively associated with tie confirmation (in a simple model: Odds ratio = 1.47, $p < .01$; in a full model with controls: Odds ratio = 1.51, $p < .01$). We also found an interaction between PSH accuracy, and the status of the individual being sought advice from, on tie confirmation (in a simple model: Odds ratio = 1.91, $p < .01$; in a full model with controls: Odds ratio = 1.90, $p < .01$). In other words, PSH accuracy was more positively related to tie confirmation when the advice contact was higher status in a simple model ($\chi^2 = 12.59$, Prob $> \chi^2 < 0.01$) as well as in a full model with controls ($\chi^2(2) = 21.07$, Prob $> \chi^2 < 0.01$). In summary, these analyses suggest that PSH accuracy may enable individuals to form more meaningful or more stable ties with others, particularly with high status others. That said, unconfirmed versus confirmed ties is at best a rough measure of tie quality and might also reflect another form of social accuracy; thus, future work should examine the outcome of relationship quality more directly. This could include investigation of the consequences of overestimation versus underestimation of particular others' status.

Fifth, it would also be worth considering any possible downsides of accurate PSHs, or upsides of inaccurate PSHs, for individuals. Although an accurate sense of the hierarchy does not mean it will be followed without question, it is possible that individuals with less accurate PSHs could be more willing to challenge the status quo and propose new ways of thinking, if only because they do not realize that they are violating status norms. Thus, it is possible that voice and creativity might benefit, under some circumstances, from reduced PSH accuracy.

Conclusion

Status dynamics pervade virtually all human interactions, and people often have incomplete information about their group's status hierarchies. Here, we found that individuals with more accurate perceptions of groups' status hierarchies formed higher status networks and exhibited increased performance. We believe that this sets the stage for a substantial research program rooted in social perceptions of the fundamental organizing structure of groups.

References

Ahearn, K. K., Ferris, G. R., Hochwarter, W. A., Douglas, C., & Ammeter, A. P. (2004). Leader political skill and team performance. *Journal of Management, 30,* 309–327. http://dx.doi.org/10.1016/j.jm.2003.01.004

Ambady, N., Bernieri, F. J., & Richeson, J. A. (2000). Toward a histology of social behavior: Judgmental accuracy from thin slices of the behavioral stream. *Advances in Experimental Social Psychology, 32,* 201–271. http://dx.doi.org/10.1016/S0065-2601(00)80006-4

Anderson, C., Ames, D. R., & Gosling, S. D. (2008). Punishing hubris: The perils of overestimating one's status in a group. *Personality and Social Psychology Bulletin, 34,* 90–101. http://dx.doi.org/10.1177/0146167207307489

Anderson, C., Brion, S., Moore, D. A., & Kennedy, J. A. (2012). A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology, 103,* 718–735. http://dx.doi.org/10.1037/a0029395

Anderson, C., Hildreth, J. A. D., & Howland, L. (2015). Is the desire for status a fundamental human motive? A review of the empirical literature. *Psychological Bulletin, 141,* 574–601. http://dx.doi.org/10.1037/a0038781

Anderson, C., John, O. P., Keltner, D., & Kring, A. M. (2001). Who attains social status? Effects of personality and physical attractiveness in social groups. *Journal of Personality and Social Psychology, 81,* 116–132. http://dx.doi.org/10.1037/0022-3514.81.1.116

Anderson, C., & Kilduff, G. J. (2009a). The pursuit of status in social groups. *Current Directions in Psychological Science, 18,* 295–298. http://dx.doi.org/10.1111/j.1467-8721.2009.01655.x

Anderson, C., & Kilduff, G. J. (2009b). Why do dominant personalities attain influence in face-to-face groups? The competence-signaling effects of trait dominance. *Journal of Personality and Social Psychology, 96,* 491–503. http://dx.doi.org/10.1037/a0014201

Anderson, C., Srivastava, S., Beer, J. S., Spataro, S. E., & Chatman, J. A. (2006). Knowing your place: Self-perceptions of status in face-to-face groups. *Journal of Personality and Social Psychology, 91,* 1094–1110. http://dx.doi.org/10.1037/0022-3514.91.6.1094

Anderson, C., & Willer, R. (2014). Do status hierarchies benefit groups? A

bounded functionalist account of status. In C. A. J. Cheng & J. Tracy (Eds.), *The psychology of social status* (pp. 47–70). New York, NY: Springer. http://dx.doi.org/10.1007/978-1-4939-0867-7_3

Anderson, C., Willer, R., Kilduff, G. J., & Brown, C. E. (2012). The origins of deference: When do people prefer lower status? *Journal of Personality and Social Psychology, 102,* 1077–1088. http://dx.doi.org/10.1037/a0027409

Arthur, W., Jr., & Day, D. V. (1994). Development of a short form for the Raven Advanced Progressive Matrices Test. *Educational and Psychological Measurement, 54,* 394–403. http://dx.doi.org/10.1177/0013164494054002013

Bales, R. F., Strodtbeck, F. L., Mills, T. M., & Roseborough, M. E. (1951). Channels of communication in small groups. *American Sociological Review, 16,* 461–468. http://dx.doi.org/10.2307/2088276

Barkow, J. H. (1975). Prestige and culture: A biosocial interpretation. *Current Anthropology, 16,* 553–572. http://dx.doi.org/10.1086/201619

Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The "Reading the Mind in the Eyes" Test revised version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. *Journal of Child Psychology and Psychiatry, 42,* 241–251. http://dx.doi.org/10.1111/1469-7610.00715

Bendersky, C., & Hays, N. A. (2012). Status conflict in groups. *Organization Science, 23,* 323–340. http://dx.doi.org/10.1287/orsc.1110.0734

Bendersky, C., & Pai, J. (2018). Status dynamics. *Annual Review of Organizational Psychology and Organizational Behavior, 5,* 183–199. http://dx.doi.org/10.1146/annurev-orgpsych-032117-104602

Bendersky, C., & Shah, N. P. (2013). The downfall of extraverts and rise of neurotics: The dynamic process of status allocation in task groups. *Academy of Management Journal, 56,* 387–406. http://dx.doi.org/10.5465/amj.2011.0316

Berger, J., Cohen, B., & Zelditch, M. (1972). Status characteristics and social interaction. *American Sociological Review, 37,* 241–255. http://dx.doi.org/10.2307/2093465

Berger, J., Rosenholtz, S. J., & Zelditch, M., Jr. (1980). Status organizing processes. *Annual Review of Sociology, 6,* 479–508. http://dx.doi.org/10.1146/annurev.so.06.080180.002403

Bernstein, I. S. (1981). Dominance: The baby and the bathwater. *Behavioral and Brain Sciences, 4,* 419–457. http://dx.doi.org/10.1017/S0140525X00009614

Bian, Y., & Ang, S. (1997). Guanxi networks and job mobility in China and Singapore. *Social Forces, 75,* 981–1005. http://dx.doi.org/10.1093/sf/75.3.981

Blackman, M. C., & Funder, D. C. (1998). The effect of information on consensus and accuracy in personality judgment. *Journal of Experimental Social Psychology, 34,* 164–181. http://dx.doi.org/10.1006/jesp.1997.1347

Blader, S. L., & Chen, Y. R. (2011). What influences how higher-status people respond to lower-status others? Effects of procedural fairness, outcome favorability, and concerns about status. *Organization Science, 22,* 1040–1060. http://dx.doi.org/10.1287/orsc.1100.0558

Blader, S. L., & Yu, S. (2017). Are status and respect different or two sides of the same coin? *The Academy of Management Annals, 11,* 800–824. http://dx.doi.org/10.5465/annals.2015.0150

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. http://dx.doi.org/10.1037/0021-9010.69.2.214

Brands, R. A. (2013). Cognitive social structures in social network research: A review. *Journal of Organizational Behavior, 34,* S82–S103. http://dx.doi.org/10.1002/job.1890

Brands, R. A., & Kilduff, M. (2014). Just like a woman? Effects of gender-biased perceptions of friendship network brokerage on attributions and performance. *Organization Science, 25,* 1530–1548. http://dx.doi.org/10.1287/orsc.2013.0880

Brass, D. J. (1984). Being in the right place: A structural analysis of individual influence in an organization. *Administrative Science Quarterly, 29,* 518–539. http://dx.doi.org/10.2307/2392937

Brody, N. (2004). What cognitive intelligence is and what emotional intelligence is not. *Psychological Inquiry, 15,* 234–238.

Brown, R. D., & Hauenstein, N. M. A. (2005). Interrater agreement reconsidered: An alternative to the r_{wg} Indices. *Organizational Research Methods, 8,* 165–184. http://dx.doi.org/10.1177/1094428105275376

Buhs, E. S., & Ladd, G. W. (2001). Peer rejection as an antecedent of young children's school adjustment: An examination of mediating processes. *Developmental Psychology, 37,* 550–560. http://dx.doi.org/10.1037/0012-1649.37.4.550

Bunderson, J. S. (2003). Recognizing and utilizing expertise in work groups: A status characteristics perspective. *Administrative Science Quarterly, 48,* 557–591. http://dx.doi.org/10.2307/3556637

Burt, R. S. (1992). *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.

Buss, D. M. (2008). *Evolutionary psychology: The new science of the mind* (3rd ed.). Boston, MA: Allyn & Bacon.

Cameron, A. C., Gelbach, J. B., & Miller, D. L. (2008). Bootstrap-based improvements for inference with clustered errors. *The Review of Economics and Statistics, 90,* 414–427. http://dx.doi.org/10.1162/rest.90.3.414

Cameron, A. C., & Miller, D. L. (2015). A practitioner's guide to cluster-robust inference. *The Journal of Human Resources, 50,* 317–372. http://dx.doi.org/10.3368/jhr.50.2.317

Carboni, I., & Gilman, R. (2012). Brokers at risk: Gender differences in the effects of structural position on social stress and life satisfaction. *Group Dynamics: Theory, Research, and Practice, 16,* 218–230. http://dx.doi.org/10.1037/a0028753

Casciaro, T. (1998). Seeing things clearly: Social structure, personality, and accuracy in social network perception. *Social Networks, 20,* 331–351. http://dx.doi.org/10.1016/S0378-8733(98)00008-2

Casciaro, T., Carley, K. M., & Krackhardt, D. (1999). Positive affectivity and accuracy in social network perception. *Motivation and Emotion, 23,* 285–306. http://dx.doi.org/10.1023/A:1021390826308

Case, C. R., Bae, K. K., & Maner, J. K. (2018). To lead or to be liked: When prestige-oriented leaders prioritize popularity over performance. *Journal of Personality and Social Psychology, 115,* 657–676. http://dx.doi.org/10.1037/pspi0000138

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. http://dx.doi.org/10.1037/a0030398

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. http://dx.doi.org/10.1016/j.evolhumbehav.2010.02.004

Cheng, J. T., Tracy, J. L., Ho, S., & Henrich, J. (2016). Listen, follow me: Dynamic vocal signals of dominance predict emergent social rank in humans. *Journal of Experimental Psychology: General, 145,* 536–547. http://dx.doi.org/10.1037/xge0000166

Christie, R., & Geis, F. L. (1970). *Studies in Machiavellianism*. New York, NY: Academic Press.

Cohen, J. (1969). *Statistical power analysis for the behavioral sciences*. New York, NY: Academic Press.

Daniels, D. P., Neale, M. A., & Greer, L. L. (2017). Spillover bias in diversity judgment. *Organizational Behavior and Human Decision Processes, 139,* 92–105. http://dx.doi.org/10.1016/j.obhdp.2016.12.005

de Graaf, N. D., & Flap, H. D. (1988). "With a little help from my friends": Social resources as an explanation of occupational status and income in

west Germany, the Netherlands, and the United States. *Social Forces, 67,* 452–472. http://dx.doi.org/10.1093/sf/67.2.452

Dekker, D., Krackhardt, D., & Snijders, T. A. B. (2007). Sensitivity of MRQAP tests to collinearity and autocorrelation conditions. *Psychometrika, 72,* 563–581. http://dx.doi.org/10.1007/s11336-007-9016-1

Driskell, J. E., & Mullen, B. (1990). Status, expectations, and behavior: A meta-analytic review and test of the theory. *Personality and Social Psychology Bulletin, 16,* 541–553. http://dx.doi.org/10.1177/0146167290163012

Duguid, M. M., Loyd, D. L., & Tolbert, P. S. (2012). The impact of categorical status, numeric representation, and work group prestige on preference for demographically similar others: A value threat approach. *Organization Science, 23,* 386–401. http://dx.doi.org/10.1287/orsc.1100.0565

Elfenbein, H. A., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin, 128,* 203–235. http://dx.doi.org/10.1037/0033-2909.128.2.203

Ellis, L. (1995). Dominance and reproductive success among nonhuman animals: A cross-species comparison. *Ethology and Sociobiology, 16,* 257–333. http://dx.doi.org/10.1016/0162-3095(95)00050-U

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41,* 1149–1160. http://dx.doi.org/10.3758/BRM.41.4.1149

Ferris, G. R., Treadway, D. C., Kolodinsky, R. W., Hochwarter, W. A., Kacmar, C. J., Douglas, C., & Frink, D. D. (2005). Development and validation of the political skill inventory. *Journal of Management, 31,* 126–152. http://dx.doi.org/10.1177/0149206304271386

Flynn, F. J., Reagans, R. E., Amanatullah, E. T., & Ames, D. R. (2006). Helping one's way to the top: Self-monitors achieve status by helping others and knowing who helps whom. *Journal of Personality and Social Psychology, 91,* 1123–1137. http://dx.doi.org/10.1037/0022-3514.91.6.1123

Freeman, L. C. (1978). Centrality in social networks conceptual clarification. *Social Networks, 1,* 215–239. http://dx.doi.org/10.1016/0378-8733(78)90021-7

Freeman, L., & Romney, A. (1987). Words, deeds and social structure: A preliminary study of the reliability of informants. *Human Organization, 46,* 330–334. http://dx.doi.org/10.17730/humo.46.4.u122402864140315

Funder, D. C. (1987). Errors and mistakes: Evaluating the accuracy of social judgment. *Psychological Bulletin, 101,* 75–90. http://dx.doi.org/10.1037/0033-2909.101.1.75

Gosling, S. D., Rentfrow, P. J., & Swann, W. B., Jr. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37,* 504–528. http://dx.doi.org/10.1016/S0092-6566(03)00046-1

Greenhaus, J. H., Parasuraman, S., & Wormley, W. M. (1990). Effects of race on organizational experience, job performance evaluations, and career outcomes. *Academy of Management Journal, 33,* 64–86.

Halevy, N., Chou, E. Y., Galinsky, A. D., & Murnighan, J. K. (2012). When hierarchy wins. *Social Psychological and Personality Science, 3,* 398–406. http://dx.doi.org/10.1177/1948550611424225

Hall, J. A., Coats, E. J., & LeBeau, L. S. (2005). Nonverbal behavior and the vertical dimension of social relations: A meta-analysis. *Psychological Bulletin, 131,* 898–924. http://dx.doi.org/10.1037/0033-2909.131.6.898

Hall, J. A., & Friedman, G. B. (1999). Status, gender, and nonverbal behavior: A study of structured interactions between employees of a company. *Personality and Social Psychology Bulletin, 25,* 1082–1091. http://dx.doi.org/10.1177/01461672992512002

Hays, N. A., & Bendersky, C. (2015). Not all inequality is created equal: Effects of status versus power hierarchies on competition for upward mobility. *Journal of Personality and Social Psychology, 108,* 867–882. http://dx.doi.org/10.1037/pspi0000017

Henrich, J., & Gil-White, F. J. (2001). The evolution of prestige: Freely conferred deference as a mechanism for enhancing the benefits of cultural transmission. *Evolution and Human Behavior, 22,* 165–196. http://dx.doi.org/10.1016/S1090-5138(00)00071-4

Hill, J. (1984). Prestige and reproductive success in man. *Ethology and Sociobiology, 5,* 77–95. http://dx.doi.org/10.1016/0162-3095(84)90011-6

Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., . . . Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO_7 scale. *Journal of Personality and Social Psychology, 109,* 1003–1028. http://dx.doi.org/10.1037/pspi0000033

Hofstede, G. (1980). Motivation, leadership, and organization: Do American theories apply abroad? *Organizational Dynamics, 9,* 42–63. http://dx.doi.org/10.1016/0090-2616(80)90013-3

Hosking, J. R. M., Wallis, J. R., & Wood, E. F. (1985). Estimation of the generalized extreme-value distribution by the method of probability-weighted moments. *Technometrics, 27,* 251–261. http://dx.doi.org/10.1080/00401706.1985.10488049

Humphreys, P., & Berger, J. (1981). Theoretical consequences of the status characteristics formulation. *American Journal of Sociology, 86,* 953–983. http://dx.doi.org/10.1086/227350

Hunt, E. (2010). *Human intelligence*. New York, NY: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511781308

Ibarra, H. (1993). Network centrality, power, and innovation involvement: Determinants of technical and administrative roles. *Academy of Management Journal, 36,* 471–501.

Jehn, K. A., Rispens, S., & Thatcher, S. M. B. (2010). The effects of conflict asymmetry on work group and individual outcomes. *Academy of Management Journal, 53,* 596–616. http://dx.doi.org/10.5465/amj.2010.51468978

Jensen, A. R. (1980). *Bias in mental testing*. New York, NY: Free Press.

Johnson, R. T., Burk, J. A., & Kirkpatrick, L. A. (2007). Dominance and Prestige as differential predictors of aggression and testosterone levels in men. *Evolution and Human Behavior, 28,* 345–351. http://dx.doi.org/10.1016/j.evolhumbehav.2007.04.003

Judge, T. A., & Ilies, R. (2002). Relationship of personality to performance motivation: A meta-analytic review. *Journal of Applied Psychology, 87,* 797–807. http://dx.doi.org/10.1037/0021-9010.87.4.797

Kammrath, L. K., Armstrong, B. F., III, Lane, S. P., Francis, M. K., Clifton, M., McNab, K. M., & Baumgarten, O. M. (2019). What predicts who we approach for social support? Tests of the attachment figure and strong ties hypotheses. *Journal of Personality and Social Psychology*. [Advance online publication.] http://dx.doi.org/10.1037/pspi0000189

Kay, A. C., Gaucher, D., Peach, J. M., Laurin, K., Friesen, J., Zanna, M. P., & Spencer, S. J. (2009). Inequality, discrimination, and the power of the status quo: Direct evidence for a motivation to see the way things are as the way they should be. *Journal of Personality and Social Psychology, 97,* 421–434. http://dx.doi.org/10.1037/a0015997

Kenny, D. A. (1995). The effect of nonindependence on significance testing in dyadic research. *Personal Relationships, 2,* 67–75. http://dx.doi.org/10.1111/j.1475-6811.1995.tb00078.x

Kiesner, J., Poulin, F., & Nicotra, E. (2003). Peer relations across contexts: Individual-network homophily and network inclusion in and after school. *Child Development, 74,* 1328–1343. http://dx.doi.org/10.1111/1467-8624.00610

Kilduff, G. J., & Galinsky, A. D. (2013). From the ephemeral to the enduring: How approach-oriented mindsets lead to greater status. *Journal of Personality and Social Psychology, 105,* 816–831. http://dx.doi.org/10.1037/a0033667

Kilduff, G. J., Willer, R., & Anderson, C. (2016). Hierarchy and its discontents: Status disagreement leads to withdrawal of contribution and lower group performance. *Organization Science, 27,* 373–390. http://dx.doi.org/10.1287/orsc.2016.1058

Kilduff, M., Crossland, C., Tsai, W., & Bowers, M. T. (2016). Magnification and correction of the acolyte effect: Initial benefits and ex post settling up in NFL coaching careers. *Academy of Management Journal, 59,* 352–375. http://dx.doi.org/10.5465/amj.2014.0239

Kilduff, M., Crossland, C., Tsai, W., & Krackhardt, D. (2008). Organizational network perceptions versus reality: A small world after all? *Organizational Behavior and Human Decision Processes, 107,* 15–28. http://dx.doi.org/10.1016/j.obhdp.2007.12.003

Kilduff, M., & Krackhardt, D. (1994). Bringing the individual back in: A structural analysis of the internal market for reputation in organizations. *Academy of Management Journal, 37,* 87–108.

Kline, P., & Santos, A. (2012). A score based approach to wild bootstrap inference. *Journal of Econometric Methods, 1,* 23–41. http://dx.doi.org/10.1515/2156-6674.1006

Kosmitzki, C., & John, O. P. (1993). The implicit use of explicit conceptions of social intelligence. *Personality and Individual Differences, 15,* 11–23. http://dx.doi.org/10.1016/0191-8869(93)90037-4

Krackhardt, D. (1990). Assessing the political landscape: Structure, cognition, and power in organizations. *Administrative Science Quarterly, 35,* 342–369. http://dx.doi.org/10.2307/2393394

Krackhardt, D. (1992). The strength of strong ties: The importance of philos in organizations. In N. Nohria & R. Eccles (Eds.), *Networks and organizations: Structure, form, and action* (pp. 216–239). Cambridge, MA: Harvard Business School Press.

Kruglanski, A. W. (1989). The psychology of being: The problem of accuracy in social perception and cognition. *Psychological Bulletin, 106,* 395–409. http://dx.doi.org/10.1037/0033-2909.106.3.395

Kuwabara, K., Yu, S., Lee, A. J., & Galinsky, A. D. (2016). Status decreases dominance in the west but increases dominance in the east. *Psychological Science, 27,* 127–137. http://dx.doi.org/10.1177/0956797615612694

Kwan, V. S., John, O. P., Kenny, D. A., Bond, M. H., & Robins, R. W. (2004). Reconceptualizing individual differences in self-enhancement bias: An interpersonal approach. *Psychological Review, 111,* 94–110. http://dx.doi.org/10.1037/0033-295X.111.1.94

Ladd, G. W. (1983). Social networks of popular, average, and rejected children in school settings. *Merrill-Palmer Quarterly, 29,* 283–307.

Ladd, G. W., Herald-Brown, S. L., & Reiser, M. (2008). Does chronic classroom peer rejection predict the development of children's classroom participation during the grade school years? *Child Development, 79,* 1001–1015. http://dx.doi.org/10.1111/j.1467-8624.2008.01172.x

Landy, F. J. (2006). The long, frustrating, and fruitless search for social intelligence: A cautionary tale. In K. R. Murphy (Ed.), *A critique of emotional intelligence: What are the problems and how can they be fixed?* (pp. 81–123). Mahwah, NJ: Erlbaum, Publishers.

Laughlin, P. R., Kerr, N. L., Davis, J. H., Halff, H. M., & Marciniak, K. A. (1975). Group size, member ability, and social decision schemes on an intellective task. *Journal of Personality and Social Psychology, 31,* 522–535. http://dx.doi.org/10.1037/h0076474

Levesque, M. J., & Kenny, D. A. (1993). Accuracy of behavioral predictions at zero acquaintance: A social relations analysis. *Journal of Personality and Social Psychology, 65,* 1178–1187. http://dx.doi.org/10.1037/0022-3514.65.6.1178

Li, H., Chen, Y.-R., & Blader, S. L. (2016). Where is context? Advancing status research with a contextual value perspective. *Research in Organizational Behavior, 36,* 185–198. http://dx.doi.org/10.1016/j.riob.2016.10.003

Lin, N. (1999). Social networks and status attainment. *Annual Review of Sociology, 25,* 467–487. http://dx.doi.org/10.1146/annurev.soc.25.1.467

Lin, N., & Bian, Y. (1991). Getting ahead in urban China. *American Journal of Sociology, 97,* 657–688. http://dx.doi.org/10.1086/229816

Lin, N., Ensel, W. M., & Vaughn, J. C. (1981). Social resources and strength of ties: Structural factors in occupational status attainment. *American Sociological Review, 46,* 393–405. http://dx.doi.org/10.2307/2095260

Littlepage, G. E., Schmidt, G. W., Whisler, E. W., & Frost, A. G. (1995). An input-process-output analysis of influence and performance in problem-solving groups. *Journal of Personality and Social Psychology, 69,* 877–889. http://dx.doi.org/10.1037/0022-3514.69.5.877

Magee, J. C. (2009). Seeing power in action: The roles of deliberation, implementation, and action in inferences of power. *Journal of Experimental Social Psychology, 45,* 1–14. http://dx.doi.org/10.1016/j.jesp.2008.06.010

Magee, J. C., & Galinsky, A. D. (2008). Social hierarchy: The self-reinforcing nature of power and status. *The Academy of Management Annals, 2,* 351–398. http://dx.doi.org/10.1080/19416520802211628

Marineau, J. E., Labianca, G., Brass, D. J., Borgatti, S. P., & Vecchi, P. (2018). Individuals' power and their social network accuracy: A situated cognition perspective. *Social Networks, 54,* 145–161. http://dx.doi.org/10.1016/j.socnet.2018.01.006

Marks, G., & Miller, N. (1987). Ten years of research on the false-consensus effect: An empirical and theoretical review. *Psychological Bulletin, 102,* 72–90. http://dx.doi.org/10.1037/0033-2909.102.1.72

Marks, S. R. (1977). Multiple roles and role strain: Some notes on human energy, time and commitment. *American Sociological Review, 42,* 921–936. http://dx.doi.org/10.2307/2094577

Marmot, M. (2004). Status syndrome. *Significance, 1,* 150–154. http://dx.doi.org/10.1111/j.1740-9713.2004.00058.x

Marsden, P. V., & Hurlbert, J. S. (1988). Social resources and mobility outcomes: A replication and extension. *Social Forces, 66,* 1038–1059. http://dx.doi.org/10.1093/sf/66.4.1038

Mast, M. S., & Hall, J. A. (2004). Who is the boss and who is not? Accuracy of judging status. *Journal of Nonverbal Behavior, 28,* 145–165. http://dx.doi.org/10.1023/B:JONB.0000039647.94190.21

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence* (pp. 3–31). New York, NY: Basic Books.

Mehra, A., Kilduff, M., & Brass, D. J. (2001). The social networks of high and low self-monitors: Implications for workplace performance. *Administrative Science Quarterly, 46,* 121–146. http://dx.doi.org/10.2307/2667127

Mouw, T. (2006). Estimating the causal effect of social capital: A review of recent research. *Annual Review of Sociology, 32,* 79–102. http://dx.doi.org/10.1146/annurev.soc.32.061604.123150

North, M. S., & Fiske, S. T. (2015). Modern attitudes toward older adults in the aging world: A cross-cultural meta-analysis. *Psychological Bulletin, 141,* 993–1021. http://dx.doi.org/10.1037/a0039469

Park, K. H., & Kerr, P. M. (1990). Determinants of academic performance: A multinomial logit approach. *The Journal of Economic Education, 21,* 101–111. http://dx.doi.org/10.1080/00220485.1990.10844659

Phillips, J. M., & Gully, S. M. (1997). Role of goal orientation, ability, need for achievement, and locus of control in the self-efficacy and goal-setting process. *Journal of Applied Psychology, 82,* 792–802. http://dx.doi.org/10.1037/0021-9010.82.5.792

Phillips, K. W. (2003). The effects of categorically based expectations on minority influence: The importance of congruence. *Personality and Social Psychology Bulletin, 29,* 3–13. http://dx.doi.org/10.1177/0146167202238367

Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135,* 322–338. http://dx.doi.org/10.1037/a0014996

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology, 67,* 741–763. http://dx.doi.org/10.1037/0022-3514.67.4.741

Rabe-Hesketh, S., Skrondal, A., & Pickles, A. (2004). Generalized multilevel structural equation modeling. *Psychometrika, 69,* 167–190. http://dx.doi.org/10.1007/BF02295939

Raven, J. (2000). *Manual for Raven's Progressive Matrices and Vocabulary Scales: Research supplement no. 3* (2000 ed.). Oxford: Oxford Psychologists Press.

Ridgeway, C. L. (1981). Nonconformity, competence, and influence in groups: A test of two theories. *American Sociological Review, 46,* 333–347. http://dx.doi.org/10.2307/2095064

Ridgeway, C. (1991). The social construction of status value: Gender and other nominal characteristics. *Social Forces, 70,* 367–386. http://dx.doi.org/10.1093/sf/70.2.367

Ridgeway, C. L. (2001). Gender, status, and leadership. *Journal of Social Issues, 57,* 637–655. http://dx.doi.org/10.1111/0022-4537.00233

Ridgeway, C. L., & Berger, J. (1986). Expectations, legitimation, and dominance behavior in task groups. *American Sociological Review, 51,* 603. http://dx.doi.org/10.2307/2095487

Ridgeway, C. L., Berger, J., & Smith, L. (1985). Nonverbal cues and status: An expectation states approach. *American Journal of Sociology, 90,* 955–978. http://dx.doi.org/10.1086/228172

Rowell, T. E. (1974). The concept of social Dominance. *Behavioral Biology, 11,* 131–154. http://dx.doi.org/10.1016/S0091-6773(74)90289-2

Sacerdote, B. (2001). Peer effects with random assignment: Results for Dartmouth roommates. *The Quarterly Journal of Economics, 116,* 681–704. http://dx.doi.org/10.1162/00335530151144131

Sapolsky, R. M. (2005). The influence of social hierarchy on primate health. *Science, 308,* 648–652. http://dx.doi.org/10.1126/science.1106477

Savin-Williams, R. C. (1979). Dominance hierarchies in groups of early adolescents. *Child Development, 50,* 923–935. http://dx.doi.org/10.2307/1129316

Schenkel, R. (1967). Submission: Its features and function in the wolf and dog. *American Zoologist, 7,* 319–329.

Schönbrodt, F. D., Back, M. D., & Schmukle, S. C. (2012). TripleR: An R package for social relations analyses based on round-robin designs. *Behavior Research Methods, 44,* 455–470. http://dx.doi.org/10.3758/s13428-011-0150-4

Simpson, B., Willer, R., & Ridgeway, C. L. (2012). Status hierarchies and the organization of collective action. *Sociological Theory, 30,* 149–166. http://dx.doi.org/10.1177/0735275112457912

Sinha, R., Janardhanan, N. S., Greer, L. L., Conlon, D. E., & Edwards, J. R. (2016). Skewed task conflicts in teams: What happens when a few members see more conflict than the rest? *Journal of Applied Psychology, 101,* 1045–1055. http://dx.doi.org/10.1037/apl0000059

Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology, 30,* 526–537. http://dx.doi.org/10.1037/h0037039

Srivastava, S., & Anderson, C. (2011). Accurate when it counts: Perceiving power and status in social groups. In J. L. Smith, W. Ickes, J. Hall, S. D. Hodges, & W. Gardner (Eds.), *Managing interpersonal sensitivity: Knowing when –and when not –to understand others* (pp. 41–58). Hauppage, NY: Nova Science Publishers.

Totterdell, P., Holman, D., & Hukin, A. (2008). Social networkers: Measuring and examining individual differences in propensity to connect with others. *Social Networks, 30,* 283–296. http://dx.doi.org/10.1016/j.socnet.2008.04.003

Van Vugt, M. (2006). Evolutionary origins of leadership and followership. *Personality and Social Psychology Review, 10,* 354–371. http://dx.doi.org/10.1207/s15327957pspr1004_5

von Rueden, C., Gurven, M., & Kaplan, H. (2008). The multiple dimensions of male social status in an Amazonian society. *Evolution and Human Behavior, 29,* 402–415. http://dx.doi.org/10.1016/j.evolhumbehav.2008.05.001

Wayne, S., & Liden, R. (1995). Effects of impression management on performance ratings: A longitudinal study. *Academy of Management Journal, 38,* 232–260.

West, T. V., & Kenny, D. A. (2011). The truth and bias model of judgment. *Psychological Review, 118,* 357–378. http://dx.doi.org/10.1037/a0022936

White, D. R., & Houseman, M. (2002). The navigability of strong ties: Small worlds, tie strength, and network topology. *Complexity, 8,* 72–81. http://dx.doi.org/10.1002/cplx.10053

Willer, R. (2009). Groups reward individual sacrifice: The status solution to the collective action problem. *American Sociological Review, 74,* 23–43. http://dx.doi.org/10.1177/000312240907400102

Witkower, Z., Tracy, J. L., Cheng, J. T., & Henrich, J. (2019). Two signals of social rank: Prestige and dominance are associated with distinct nonverbal displays. *Journal of Personality and Social Psychology*. Advance online publication. http://dx.doi.org/10.1037/pspi0000181

Wood, W., Lundgren, S., Ouellette, J. A., Busceme, S., & Blackstone, T. (1994). Minority influence: A meta-analytic review of social influence processes. *Psychological Bulletin, 115,* 323–345. http://dx.doi.org/10.1037/0033-2909.115.3.323

Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N., & Malone, T. W. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science, 330,* 686–688. http://dx.doi.org/10.1126/science.1193147

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