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**Authors**

Anderson, Cameron
Brion, Sebastien
Moore, Don A.
et al.

**Publication Date**

2012-03-02

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Cameron Anderson

University of California, Berkeley

Sebastien Brion

University of Navarra

Don A. Moore and Jessica A. Kennedy

University of California, Berkeley

Author Note

Cameron Anderson, Haas School of Business, University of California, Berkeley;

Sebastien Brion, IESE Business School, University of Navarra; Don A. Moore, Haas School of

Business, University of California, Berkeley; Jessica A. Kennedy, Haas School of Business,

University of California, Berkeley.

Correspondence should be sent to Cameron Anderson, Haas School of Business,

University of California, Berkeley, 545 Student Services Building #1900, Berkeley, CA 94720-

1900. Email: anderson@haas.berkeley.edu

**Abstract**

In explaining the prevalence of the overconfident belief that one is better than others, prior work has focused on the motive to maintain high self-esteem, abetted by biases in attention, memory, and cognition. An additional possibility is that overconfidence enhances the person's social status. We tested this status-enhancing account of overconfidence in six studies. Studies 1 through 3 found overconfidence leads to higher social status in both short and longer-term groups, using naturalistic and experimental designs. Study 4 applied a Brunswikian (1956) lens analysis and found that overconfidence leads to a behavioral signature that makes the individual appear competent to others. Studies 5 and 6 measured and experimentally manipulated the desire for status and found that the status motive promotes overconfidence. Together, these studies suggest that people might so often believe they are better than others because it helps them achieve higher social status.

A Status-Enhancement Account of Overconfidence

The pervasiveness of overconfidence is somewhat puzzling. Individuals not only tend to have positive self-perceptions, they often believe they are more talented and competent than others, even when they are not (for reviews, see Alicke & Govorun, 2005; Dunning, Heath, & Suls, 2004). To mention just a few examples, individuals tend to overplace their occupational abilities (Haun, Zeringue, Leach, & Foley, 2000), social skills (Swann & Gill, 1997), and physical talents relative to those of others (Dunning, Meyerowitz, & Holzberg, 1989; for exceptions, see Kruger & Burrus, 2004; Moore & Small, 2007). The propensity for overconfidence is puzzling because being able to accurately place one's abilities relative to those of others is clearly useful (e.g., Alicke, 1985; Dunning et al., 2004; Larrick, Burson, & Soll, 2007). Recognizing one's limitations would help people set more realistic goals (Ehrlinger & Dunning, 2003), avoid contests one will lose (Camerer & Lovallo, 1999), and select strategies that facilitate success (Neale & Bazerman, 1985), for example.

So why would individuals form *overly* positive judgments of their abilities? Scholars have mostly offered two explanations. The first explanation posits a motivated bias: Individuals are driven to be confident because it provides them with psychological benefits (Dunning, Leuenberger, & Sherman, 1995; Kunda, 1987). For example, self-confidence can improve self-esteem (Alicke, 1985), mental health (Taylor & Brown, 1988), and task motivation and persistence (Pajares, 1996).  The second explanation highlights the cognitive processes that may sometimes produce directional biases.  People might simply be unable to accurately assess their own competence and arrive at biased self-views from fairly mundane judgment processes.  For example, biased self-views can

arise simply because people are more likely to intend success than failure (Miller & Ross, 1975), because they may lack the competence to understand their own incompetence (Kruger & Dunning, 1999), and because they may hold idiosyncratic definitions of success or ability (Dunning et al., 1989; Santos-Pinto & Sobel, 2005).

A third possibility, which has received little empirical attention, is that overconfidence provides the individual with *social* benefits. A number of scholars have theorized that biased self-perceptions may help the individual succeed socially (Alexander, 1987; Krebs & Denton, 1997; Leary, 2007; Trivers, 1985; von Hippel & Trivers, 2011; Waldman, 1994). More specifically, these theories propose that overly positive self-views help individuals convince others that they are more capable than they actually are. Therefore, this account posits overconfidence to be a motivated bias. However, unlike previous theories, it proposes that overconfidence is motivated by the desire for social success in addition to the desire for psychological benefits such as higher self-esteem.

Consistent with this account, we offer and test a series of hypotheses regarding overconfidence and the attainment of *social status*. Specifically, we propose that overconfidence pervades human self-judgment because it helps individuals attain higher social status. Social status is the respect, prominence, and influence individuals enjoy in the eyes of others (Anderson, John, Keltner, & Kring, 2001; Berger, Cohen, & Zelditch, 1972; Goldhamer & Shils, 1939). Higher social status comes with a host of benefits including control over group decisions, access to scarce resources, and reproductive success (Berger et al., 1972; Blau, 1964; Ellis, 1994; Griskevicius, Tybur, & Van den Bergh, 2010; Keltner, Gruenfeld, & Anderson, 2003; Savin-Williams, 1979). The desire

for high status is widely considered a universal human motive (Buss, 1999; Maslow, 1943; Tay & Diener, 2011).

We conducted six studies that tested three main hypotheses. The first hypothesis is that overconfidence helps individuals achieve higher status in social groups. The second hypothesis is that overconfidence leads to status because it makes individuals appear competent to others, even when they lack competence. Studies 1 through 3 tested these two hypotheses by examining task dyads and groups, using both naturalistic and experimental designs. Study 4 used a Brunswikian (1956) lens analysis to examine video recordings of overconfident individuals' behavior. The third hypothesis is that the drive for social status promotes overconfidence. Studies 5 and 6 tested this hypothesis by measuring and experimentally manipulating the desire for status and observing its effect on overconfidence.

**Defining and Conceptualizing Overconfidence**

Generally, overconfidence is defined as inaccurate, overly positive perceptions of one's abilities or knowledge (for a review, see Moore & Healy, 2008). Individuals can be overconfident in a number of ways.  For instance, people can overestimate their abilities or performance relative to objective, operational criteria (e.g., Buehler, Griffin, & Ross, 1994; Krueger & Wright, 2011;). Alternatively, people can be overconfident by overplacing themselves relative to others – that is, when they believe they are better than others, even when they are not (e.g., Krueger & Mueller, 2002; Kruger & Dunning, 1999; Larrick et al., 2007).  Individuals are overconfident when they believe they are more competent than objective measures indicate, or when they think they are better than others to a greater extent than they actually are.

Overconfidence is therefore different from self-presentation and impression management, which involve deliberate attempts to present oneself in a positive light (Baumeister, 1982; Goffman, 1959; Leary & Kowalski, 1990; Paulhus, 1984). Self-presentation and impression management involve modifying one's overt social behaviors, often consciously and deliberately. Individuals who manage their impressions might or might not believe the impression they are trying to convey to others. In contrast, overconfidence is a genuine yet flawed perception of one's own abilities (see von Hippel & Trivers, 2011). Overconfidence can persist even when the stakes are high and aligned to reward accuracy (Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2008; Hoelzl & Rustichini, 2005; Williams & Gilovich, 2008).

**The Effects of Overconfidence on Status**

**Prior research**. To test the argument that overconfidence pervades self-judgment because it helps individuals attain status, it was critical to first examine whether overconfidence indeed helps individuals attain social status. Though an abundance of research has examined overly positive self-perceptions, studies have not adequately tested whether overconfidence leads to higher peer-perceived competence and status (von Hippel & Trivers, 2011). Moreover, the evidence relevant to this question has provided highly mixed results.

In the overconfidence literature, scholars have focused largely on mistakes in decision-making and their implications for performance or economic outcomes (Barber & Odean, 2000; Cheng, 2007; Camerer & Lovallo, 1999; Koellinger, Minniti, & Schade, 2007; Malmendier & Tate, 2005; Odean, 1998; Odean, 1999). Little work has addressed

the interpersonal consequences of overconfidence, such as the impact of overconfidence on peer-rated competence or status (von Hippel & Trivers, 2011).

Other work has examined overly positive perceptions using what Kwan and colleagues called a *social comparison* approach, which compares individuals' self-perceptions to their perceptions of others (cf. Bonanno, Field, Kovacevic, Kaltman, 2002; Kwan, John, Kenny, Bond, & Robbins, 2004;; Taylor & Brown, 1988; Taylor, Lerner, Sherman, Sage, & McDowell, 2003). According to this approach, individuals possess overly positive views if they believe they are better than others. However, those studies have not often distinguished inaccurate, overly positive self-perceptions from those that are justifiably positive (cf. Kwan et al., 2004; Taylor et al., 2003). Therefore, people in those studies who believed they were better than others might have in fact been better than others. It is critical to assess whether *inaccurate* self-perceptions *per se* lead to those benefits.

Still other scholars have examined overly positive self-perceptions using what Kwan and colleagues called a *self-insight* approach, which compares individuals' self-perceptions to others' perceptions of them (Anderson, Srivastava, Beer, Spataro, & Chatman, 2006; Colvin, Block, & Funder, 1995; John & Robins, 1994; Paulhus, 1998; Robins & Beer, 2001). In this approach, individuals whose self-perceptions are loftier than others' perceptions of them are considered to possess overly positive self-views. Yet those studies addressed a different phenomenon than the one in which we are interested. Namely, they focused on the consequences of possessing self-perceptions that are more positive than *others' impressions*. In contrast, we are interested in inaccurate, overly positive self-perceptions of ability and how they impact others' impressions.

To test our hypotheses, overconfidence would ideally be measured by comparing self-perceptions to operational criteria – that is, unambiguous, concrete indices of ability. For example, an ideal measure of task ability would involve test scores, and a measure of scholastic ability would involve grades (cf. Paulhus, Harms, Bruce, & Lysy, 2003). The use of operational criteria directly assesses the accuracy of self-perceptions of competence and thus is standard practice in the overconfidence literature (e.g., Krueger & Mueller, 2002; Kruger & Dunning, 1999; Larrick et al., 2007; Moore & Healy, 2008). Operational indices also help avoid some of the complications of using peer-ratings as both a benchmark of reality and as a dependent variable, such as the possibility of spurious correlations driven by common method variance (see Zuckerman & Knee, 1996).

**Overconfidence, peer-rated competence, and social status**. We hypothesized that overconfidence helps individuals attain higher social status because it helps them appear more competent in the eyes of others, even when they lack competence. How might this effect occur? Individuals' competence resides within them and is hidden from others. People are thus often forced to judge others' abilities based on superficial cues such as nonverbal behavior, appearance, or style of speaking. For example, individuals are perceived as more competent when they express their ideas more, appear more confident in their answers, and exhibit a calmer and more relaxed demeanor (Anderson & Kilduff, 2009; Carli, LaFleur, & Loeber, 1995; Driskell, Olmstead, & Salas, 1993; Imada & Hakel, 1977; Radzevick & Moore, 2011; Reynolds & Gifford, 2001; Ridgeway, 1987; Tiedens & Fragale, 2003).

Prior work suggests individuals with higher self-perceptions of competence should display more of these "competence cues" in their interactions with others (Baumeister, Campbell, Krueger, & Vohs, 2003). Self-perceptions are a powerful driver of social behavior (e.g., Swann, 2005) and individuals who believe they are competent should exhibit more competence cues.

Moreover, even *overly* positive self-perceptions of ability, or *over*confidence, should lead individuals to display more competence cues. Self-perceived abilities can determine one's behavior above and beyond one's actual abilities (Bugental & Lewis, 1999; Campbell, Goodie, & Foster, 2004; McNulty & Swann, 1994; von Hippel & Trivers, 2011). This suggests that when individuals perceive themselves as highly competent – even if they lack competence – they are likely to exhibit more competence cues when interacting with others. Therefore, in situations where there is ambiguity about the individual's competence (which are typical; Moore & Healy, 2008), holding actual competence constant, overconfident individuals should be perceived as more competent by others, compared to individuals with more accurate self-perceptions of competence.

To be clear, we do not argue that there is anything unique about *over*confidence per se that leads individuals to be perceived as more competent by others. A high level of unjustified confidence (i.e., overconfidence) should lead the individual to exhibit more competence cues, just as a high level of justified confidence does. In the eyes of the observer, it is difficult to differentiate justified from unjustified confidence.

In turn, once individuals are perceived to possess higher competence, they are likely to be afforded higher status. Although the characteristics that can lead to higher status are multifaceted, a primary and consistent predictor of status in groups is perceived

competence (e.g., Berger et al., 1972; Driskell & Mullen, 1990; Lord, De Vader, & Alliger, 1986). In general, groups give higher status to individuals who exhibit abilities that will help the group succeed (Berger et al., 1972; Eibl-Eibesfeldt, 1989; Emerson, 1962; Goldhamer & Shils, 1939). Because competent individuals can provide important contributions to the group's success, they are given higher status.

In sum, we hypothesize that overconfident individuals will be perceived by others as more competent, and in turn will achieve higher status in groups, than individuals with accurate self-perceptions of ability. Stated differently, if Persons A and B have equal levels of actual ability, but Person A has higher confidence than Person B, Person A will be seen as more competent and will attain higher status than Person B, even if Person A's confidence is unjustified.

**The Desire for Status as a Predictor of Overconfidence**

The argument that overconfidence biases self-judgment because it helps the individual attain social status implies that the human drive for status promotes overconfidence. To test this idea, we examined whether the desire for status leads to higher levels of overconfidence.

As mentioned earlier, status comes with a host of social benefits, including respect, influence, and social support (Berger et al., 1972; Blau, 1964; Ellis, 1994; Griskevicius et al., 2011; Gruenfeld & Tiedens, 2010). Correspondingly, many theorists have argued that the desire for higher status is a fundamental driver of human behavior (Barkow, 1975; Buss, 1999; Hogan, 1983; Maslow, 1943). However, even if the desire for status is pervasive, there are also differences across individuals in the degree to which they want higher status (Jackson, 1999; Josephs, Sellers, Newman, & Mehta, 2006;

Schmid Mast, Hall, & Schmid, 2010; Smith, Wigboldus, & Dijksterhuis, 2008). Some individuals desire status more than others. This inter-individual variation allows for testing the association between the desire for status and overconfidence. Accordingly, we tested whether individual differences in the desire for status predict differences in overconfidence.

Prior work has not yet tested the association between the desire for status and overconfidence. Indeed, research that has examined links between overconfidence and dispositional variables, such as personality traits, has yielded mixed results. Some studies have found positive relationships between personality and overconfidence (e.g., Schaefer, Williams, Goodie, & Campbell, 2004), while others have found null effects (e.g., Stankov & Crawford, 1997; Wright & Phillips, 1979). Moreover, to our knowledge, no one has yet manipulated the desire for status and observed its effects on overconfidence. Thus, we examined the relation between desire for status and overconfidence using both naturalistic and experimental designs.

**Study 1**

Study 1 addressed whether overconfident individuals are perceived to be more competent by others and whether they attain higher status. To test these hypotheses, we examined dyads that worked together on a laboratory task. We measured the three constructs of interest – overconfidence, peer-perceived competence, and status – using established methods from the literature.

Based on previous research on overconfidence, we used a geography knowledge task (Ehrlinger & Dunning, 2003). We first measured participants' overconfidence by having them complete the geography task individually and compared their self-perceived

performance to their actual performance (e.g., Ackerman, Beier, & Bowen, 2002; Ames & Kammrath, 2004; Jones, Panda, & Desbiens, 2008; Krueger & Mueller, 2002; Kruger & Dunning, 1999; Larrick et al., 2007; Moore & Small, 2007). We then paired participants in dyads, wherein they worked on the same geography task together. Based on the status literature, we collected peer-assessments of competence and status after the dyadic interaction (e.g., Anderson & Kilduff, 2009; Bales, Strodtbeck, Mills, & Roseborough, 1951; Berger et al., 1972; Driskell & Mullen, 1990; Ridgeway, 1987).

**Method**

**Participants.** Participants were 76 undergraduate students at a West Coast university who were divided into 38 dyads. They received $15 for their participation.

**Procedure.** In the first phase of the session, participants were presented with a blank map of North America. This map contained a small amount of topographical information (e.g., rivers and lakes), but contained no information about state or national borders. Participants were given a list of 15 U.S. cities and asked to indicate the location of each city by placing a dot on the map. Participants were told that a dot that lies within 150 miles (2.1 cm to scale) of the actual location of a city would be considered correct. After completing the test, participants rated their own performance on the task and U.S. geographic knowledge more generally. Participants were never told their actual performance on the test. In the second phase of the study, participants worked in dyads. They were randomly paired and asked to complete the same task as a dyad. More than two participants were scheduled for each laboratory session, allowing us to pair unacquainted participants together. After completing the dyadic task, participants privately rated their partner's competence and status in the dyad.

**Overconfidence**. We measured o*verplacement*, the overestimation of one's ability relative to that of others.[1] In the individual task, participants were asked (a) how they compared to the other participants in the study on their general knowledge of U.S. geography, and (b) how their task scores compared to those of other participants. Both questions were rated on a scale from 1 (I'm at the very bottom; worse than 99% of the people in this study) to 100 (I'm at the very top; better than 99% of the people in this study)." These two items correlated, $r$ (74) = .92, $p < .01$, and were combined to measure self-perceived percentile rank.

We scored actual performance as described above. This data for one participant were lost, leaving 75 participants' data for the analyses. Participants showed reliability in their performance across the cities, $\alpha$ = .66 ($M = 6.84$, $SD = 2.85$). We transformed their scores into percentile rankings to compare their self-perceived ranks to their actual ranks (which correlated with each other, $r$ [73] = .56, $p < .001$).

As many scholars recommend, we measured overconfidence by regressing participants' actual performance onto their self-evaluations and retaining the residuals of the self-evaluations (Cohen et al., 2003; Cronbach & Furby, 1970; DuBois, 1957; John & Robins, 1994).[2] The residual score captures the variability in self-perceived rank after the variance predicted by actual rank has been removed.

**Partner-rated competence.** After participants worked in dyads, they ranked their partner's U.S. geographic knowledge relative to other participants' (using the same percentile rank scale). Participants also rated the accuracy of their partner's knowledge of U.S. Geography on a Likert-style item, on a scale from 1 (*Not at all accurate*) to 7 (*Very*

*accurate*). These two items correlated with each other $r$ (74) = .52, $p$ < .001, $\alpha$ = .69, and

were standardized and combined to form a measure of partner-rated task competence.

**Status.** Previous theoretical conceptions of status in groups have identified status

as involving respect, influence, leadership, and perceived contributions to the group's

decisions (e.g., Anderson et al., 2006; Bales et al., 1951; Berger et al., 1972; Cohen &

Zhou, 1991). While these components can be conceptually distinguished from each other

(e.g., Goldhamer & Shils, 1939; Magee & Galinsky, 2008), they tend to correlate so

highly in groups that they are best understood as comprising one overarching status

construct (e.g., Anderson et al., 2001; Anderson & Kilduff, 2009; Bales et al., 1951;

Berger, Rosenholtz, & Zelditch, 1980; Blau, 1964; Ridgeway, 1987). Therefore, in this

study, each participant rated the degree to which his or her partner deserved respect and

admiration, had influence over the decisions, led the decision-making process, and

contributed to the decisions. Each of these four items was rated on a scale from 1

(*Disagree strongly*) to 7 (*Agree strongly*). These four items correlated together ($\alpha$ = .87)

so we combined them into one measure of status, $M$ = 4.88, $SD$ = 1.36.

**Results and Discussion**

Because data collected in dyads can violate assumptions of independence, we

tested our hypotheses with a statistical technique outlined by Gonzalez and Griffin

(1997). This involves calculating the correlation between the variables and translating the

correlation into a z-score that accounts for dependence in the data (also see Griffin &

Gonzalez, 1995).

**Partner-rated competence**. As expected, overconfidence predicted partner-rated

competence, $r$ (73) = .36 ($z$ = 3.07, $p$ < .01). This suggests that more overconfident

individuals were perceived as more competent by their partners, as compared to individuals with more accurate self-perceptions. It is important to note that the index of overconfidence we employed reflects bias in self-perceptions.  Consequently, the observed correlation reflects the relationship between positive bias in self-perception and others' ratings of one's abilities.

**Status**. Overconfidence also predicted status in the dyad, $r$ (73) = .26 ($z$ = 2.10, $p$ < .05), suggesting that overconfident individuals achieved higher status than individuals with more accurate self-perceptions. We thus examined whether the relation between overconfidence and status was mediated by partners' ratings of competence. This mediation analysis is illustrated in Figure 1. We used Preacher and Hayes' (2008) bootstrapping procedure. We used 1000 resamples with replacement to derive a 95% confidence bias-corrected confidence interval for the indirect effect of overconfidence on status as transmitted via partner-rated competence. This analysis revealed an indirect effect of .018 with a 95% confidence interval ranging from .007 – .032. Because the interval excludes zero, this indicated a statistically significant indirect effect (Preacher & Hayes, 2008). Further, the relation between overconfidence and status was reduced to zero ($b^*$ = .00, $t$ = .025, $ns$) after controlling for partner-rated competence. This suggests that the relation between overconfidence and status in the dyad was fully mediated by partner-ratings of competence.

**Summary**. Consistent with our hypotheses, overconfident individuals were perceived as more competent by their partners. Moreover, this higher peer-rated competence led overconfident individuals to attain higher status in the dyadic task.

**Study 2**

Study 2 extended the findings from Study 1 in several ways. First, some theorists have suggested that the interpersonal benefits of overly positive self-perceptions are limited to short-term interactions and that they disappear over time, as individuals get to know each other and obtain enough evidence to assess whether each person's confidence is justified (Colvin et al., 1995; Tenney, Spellman, & MacCoun, 2008). However, prior evidence in support of this argument used personality traits and *self-insight* measures described in the introduction (Paulhus, 1998). We expected the status-related benefits of overconfidence to endure over time. Otherwise, the status-related benefits of overconfidence would be somewhat limited, given the large proportion of time individuals spend interacting with friends, colleagues, and coworkers (i.e., individuals with whom one is familiar). In Study 2, we assessed project teams that worked closely together over 7 weeks.

Second, to further test the robustness of our finding, we used a different measure of overconfidence – Paulhus and colleagues' well-validated and widely used *Over-Claiming Questionnaire* (OCQ; Paulhus et al., 2003). The OCQ is a clever way to measure overconfidence in one's body of knowledge. It asks respondents to rate their familiarity with a list of items such as famous names, events, or clothing brands. Some of the items are *foils*, in that they do not actually exist. The measure gauges the extent to which individuals *over-claim*, or claim knowledge about non-existent items, and thus exhibit overconfidence in their knowledge (Paulhus et al., 2003). The OCQ was ideal for our purposes because it assesses overconfidence using operational criteria. Individuals

who claim familiarity with nonexistent items are exhibiting a departure from reality, and overconfidence. Indeed, the OCQ correlates with overplacement (Paulhus et al., 2003).

Third, we wanted to rule out the possibility that individual differences acted as third variables. In particular, confidence has been associated with higher levels of optimism (Wolfe & Grosch, 1990), trait dominance (Gough, McClosky, & Meehl,, 1951), and extraversion (Schaefer et al., 2004), and lower levels of neuroticism (Costa & McCrae, 1992). Each of these four individual differences has also been linked to the attainment of status (Anderson et al., 2001; Lord et al., 1986; Stogdill, 1948). Therefore, we measured each of these individual differences.

Fourth, we wanted to demonstrate that granting status to overconfident individuals is a "real" effect, in that group members truly believed them to be worthy. We thus utilized "life-outcome" data in Study 2 in addition to peer-rated status. In these student teams, part of their final grade in the class was determined by the grade given to them by their teammates. We tested whether overconfidence would help individuals achieve higher peer-assigned grades as well as higher status.

**Method**

**Participants**. The study's participants were the 243 members of the first-year Masters of Business Administration (MBA) class at a West Coast business school (69% men). Participants in the sample had been assigned to one of 48 groups of five or six people by the school at the beginning of the year, with the goal of maximizing the diversity of each group in terms of gender, race, culture, disciplinary training, and work experience.

**Procedure**. Prior to the first day of class, participants were asked via email to complete an online survey with individual difference measures. Over the course of the seven-week class, students worked intensely together in their groups to complete a course project that was submitted on the final day of class. The final project was a paper on which the group collaborated. Students worked in these same groups for all four of the classes they were taking at that same time. Two days after the final class session, participants received a link to an online survey that asked them to rate each group member. We were unable to measure peer-rated competence and thus focused on status in the team.

**Overconfidence**. Prior to the first day of class, participants completed a 60-item version of the Over-Claiming Questionnaire (OCQ; Paulhus et al., 2003), which asked them to rate their familiarity with 60 items in four different domains on a scale ranging from 0 (*never heard of it*) to 4 (*know it very well*). One out of every five items was a foil, in that it was bogus. We used Paulhus and colleagues' (2003) recommended strategy of scoring *over-claiming* with signal detection analysis. The scoring roughly translates to the mean of the hit rate (i.e., the proportion of times the person correctly identified an item that actually exists) and the false-alarm rate (i.e., the proportion of times the person incorrectly identified a nonexistent item as real), thus capturing the tendency to say "Yes, I recognize that item" versus "No, I don't recognize that item." The over-claiming index was reliable ($\alpha = .70$).

To examine the effect of actual knowledge, we also scored participants' accuracy on the OCQ using Paulhus et al.'s (2003) recommended strategy that also involves signal detection analysis. *Accuracy* is indexed by the number of hits relative to the number of

false alarms; individuals receive points for accurate hits and penalties for false alarms. An accurate individual, then, is not the one scoring the most hits but the one showing the best ability to discriminate between existent and nonexistent items. The OCQ *accuracy* index was also reliable ($\alpha = .60$).

**Optimism**. We measured optimism with Scheier, Carver, and Bridges's (1994) six-item Life Orientation Test - Revised ($\alpha = .78$).

**Dominance**. Participants rated their trait dominance with the 16 items from the dominance and submissiveness scales from the Revised Interpersonal Adjective Scales (IAS-R; Wiggins, Trapnell, & Phillips, 1988), $\alpha = .80$.

**Big Five personality dimensions**. Extraversion involves traits such as sociability, activity, and positive emotionality (John & Srivastava, 1999). Neuroticism reflects individual differences in negative emotionality (Costa & McCrae, 1992). To measure these dimensions, we used the Big Five Inventory (BFI; John & Srivastava, 1999). The reliabilities were satisfactory for extraversion ($\alpha = .85$) and neuroticism ($\alpha = .73$).

**Status**. Due to space limitations, we asked one status question at the end of the seven weeks: "Please indicate how much each group member influenced the group's decisions" on a 1 (*very little*) to 7 (*a great deal*) scale. Influence is a core component of status hierarchies or "power-prestige" orders in groups; further, individuals must achieve respect and admiration in the eyes of others, or they will not be granted influence (Blau, 1964; Homans, 1950; Ridgeway & Diekema, 1989).

The group members' ratings of each other constituted a *round-robin* design, so we used the software program SOREMO (Kenny, 1994) to implement the Social Relations Model (SRM) analyses of these peer ratings (Kenny & La Voie, 1984). We found

significant peer agreement in these judgments (relative target variance = .74). SOREMO

calculates a *target score* for each participant on each peer-rated dimension.  This target

score is essentially the average of the ratings given to the person on that dimension, but

SOREMO removes group differences from target scores, making them statistically

independent of group membership.[3] In addition, we centered all other individual

difference variables around their group mean to control for group effects. (We also ran

the analyses with non-centered variables; no finding changed from statistically significant

to non-significant or vice-versa).

**Peer-assigned grade**. Each individual assigned a grade (A through F) to each

other group member. Grades were then coded using grade points (0-4).

**Results and Discussion**

As shown in Table 1, overconfidence (i.e., over-claiming) predicted influence in

the group, supporting our hypothesis that overconfident individuals would have higher

status, even after the group had worked together for seven weeks. Table 1 presents

coefficients from a multiple regression analysis in which we predicted status with

overconfidence and accuracy on the OCQ as well as the aforementioned four individual

difference variables. This finding lends some reassurance that the relation between

overconfidence and status was not driven by any of these other variables. We also tested

for a possible curvilinear effect, but the quadratic term in a multiple regression was again

not significant, $B = -.04$ ($SE = .03$, *n.s.*). As shown in Table 1, overconfidence also

predicted the grade that teammates assigned to the individual, suggesting that

overconfident individuals not only attained higher status but were also assigned higher

grades by peers. These results also help further establish that overconfidence has consequences for outcomes for which individuals care a great deal.

## Study 3

Although Study 2 addressed a number of possible third-variable explanations, in Study 3, we took the additional step of using an experimental design that manipulated overconfidence. One obvious way to manipulate overconfidence would be to present participants with vignettes of individuals who exhibit overconfidence (e.g., Jones & Shrauger, 1970; Powers & Zuroff, 1986). However, this method might suffer from lower external validity, as studies suggest that confident individuals rarely directly boast about themselves (Anderson & Kilduff, 2009). We thus aimed to manipulate overconfidence more realistically, in actual individuals who then worked with others on joint tasks.

Previous research has used false feedback manipulations to shape the positivity of participants' self-concept (e.g., Harmon-Jones et al., 1997). Though much of that work provided focused on self-esteem, we thus provided more specific feedback about abilities on a specific task to influence overconfidence only.

To manipulate overconfidence, we needed to focus on self-perceptions of ability that would be possible to manipulate in the laboratory. One such ability is person perception. Prior research suggests that individuals tend to be largely unaware of their person perception accuracy (e.g., Ames & Kammrath, 2004; DePaulo, Charlton, Cooper, Lindsay, & Muhlenbruck, 1997; Swann & Gill, 1997). We exploited this by giving randomly selected participants overly positive feedback about their person perception skills. Others received accurate feedback.

**Method**

**Participants.** Participants were undergraduate students ($N = 80$, 53% women) at a West Coast university who received course credit. The participants were on average 21 years old ($SD = 1.0$). The sample was 70% Asian-American, 20% Caucasian, and 10% who reported other their ethnicities.

**Procedure and design.** The laboratory session had three phases. In the first phase, participants privately viewed still images of 10 individuals via computer and judged each individual's personality on 10 items (Gosling, Rentfrow, & Swann, 2003).[4] After judging each target, participants estimated their own performance.

To manipulate self-perceived ability, after participants judged the first five targets, those randomly assigned to the *overconfident* condition received overly positive feedback about their performance up to that point, whereas those randomly assigned to the *accurate* condition received accurate performance feedback. (We administered this feedback halfway through the individual task so we could check its effectiveness in the remainder of the individual task.)

In the second phase of the session, participants in the *overconfident* condition were randomly paired in dyads with participants in the *accurate* condition and they completed a similar person perception task together. Finally, dyad partners were separated and privately provided various peer-ratings.

**Overconfidence manipulation.** Following Swann and Gill (1997), participants were told that each answer was considered correct if it was within 0.5 above or below the target's true score. Participants in the *overconfident* condition were told that they answered 37 out of 50 responses correctly on the first five targets.[5] In the *accurate* condition, participants were told the actual number of items they answered correctly for

the first five targets, which on average was 8.8 out of 50 ($SD$ = 3.03). A suspicion check at the end of the study showed that no participant in either condition suspected the performance feedback to be false.

To ensure that participants in both conditions interpreted their scores using the same metric, we also told them that attaining 8 correct answers was performing "as well as chance (the same as guessing randomly)," and that attaining 32 correct answers was performing "extremely well." To avoid the possibility that dyad partners would simply exchange their feedback scores, participants were instructed not to share their scores with their partner. An experimenter was present while dyads worked together to ensure no partners exchanged this information.

**Self-perceived competence.** As in Study 1, in the individual task, participants estimated their percentile rank relative to other students at their university. Before participants were given performance feedback, their estimates of their own abilities were reliable across the first five targets ($\alpha$ = .93), and thus combined. After they received the feedback, participants' estimates of their own abilities were again reliable across the second set of five targets ($\alpha$ = .96), and thus combined.

**Actual performance**. We scored participants' actual performance on the task using the method described to them. Participants showed reliability in their actual accuracy across targets, $\alpha$ = .71. We thus combined their scores across the targets to form an overall index of actual ability, and then transformed their performance scores into percentile rankings to allow us to score *overplacement*.

**Partner-rated competence.** In the peer-ratings phase, participants estimated their partner's competence on the task with four items. First, they used the same percentile-

rank item on which they assessed their own ability. To increase the reliability of this peer-rating, they also rated their partner using three items from the Mind-Reading Belief Scale (Realo et al., 2003): "A stranger's character is revealed to my partner at first sight," "It is hard for my partner to tell a person's thoughts by their looks," and "I do not think my partner is good at knowing human nature / judging people." These three items were rated on a scale from 1 (*Disagree strongly*) to 7 (*Agree strongly*). After standardizing all items and reverse-scoring the latter two, they correlated together ($\alpha = .63$) and thus combined.

**Status in the dyad.** Participants rated their partner's status in the dyad with the same four items as in Study 1. The item measuring respect and admiration had a low item-total correlation (.13) and was excluded from the measure. The remaining three items showed sufficient reliability ($\alpha = .62$) and thus combined.

**State self-esteem**. Providing individuals with positive feedback about the self can boost self-esteem (e.g., Harmon-Jones et al., 1997). To alleviate the concern that any effects of the manipulation might be due to self-esteem rather than to overconfidence, we measured state self-esteem in the peer-ratings phase using Heatherton and Polivy's (1991) 20-item measure ($\alpha = .87$).

**Results and Discussion**

**Manipulation check.** As expected, a repeated-measures ANOVA showed that before the performance feedback was administered, self-perceived rankings in competence did not differ between participants in the *overconfident* condition ($M = 61.61$, $SD = 14.84$) and in the *accurate* condition ($M = 61.23$, $SD = 14.76$), $F(1, 39) = .02$, *ns*. Thus participants in the two conditions did not differ in overconfidence before the feedback was administered.

However, after the feedback was administered, a repeated-measures ANOVA showed that participants in the *overconfident* condition had higher self-perceptions of their competence relative to others' ($M = 62.82$, $SD = 15.82$) than did participants in the *accurate* condition ($M = 57.14$, $SD = 15.25$), $F (1, 39) = 3.92$, $p = .05$. Further, a within-subjects ANOVA showed that participants in the *overconfident* condition overestimated their ranks, $F (1, 39) = 17.37$, p < .01, whereas participants in the *accurate* condition did not, $F (1, 39) = 1.70$, *ns*. Therefore, the feedback manipulation was effective. It is interesting to note, however, that the overconfidence condition did not boost participants' overconfidence, but rather, allowed them to remain overconfident. The accuracy condition reduced participants' overconfidence to make them more accurate.

Finally, a between-subjects ANOVA showed that participants in the *overconfident* condition ($M = 3.76$, $SD = 0.58$) reported the same level of state self-esteem as participants in the *accurate* condition ($M = 3.76$, $SD = .49$), $F (1, 39) = .00$, *ns*. Thus, the manipulation had the targeted effect on overconfidence but did not affect state self-esteem.

**Partner-rated competence.** A repeated-measures ANOVA showed that participants in the *overconfident* condition were perceived by their partners as more competent at the task ($M = .23$, $SD = 0.63$) than participants in the *accurate* condition ($M = -.25$, $SD = 0.68$), $F (1,39) = 13.20$, p < .01. This provides some causal evidence that overconfidence led to being perceived as more task competent. To illustrate this effect in a more intuitive way, we focused on one of the items of the partner-rated competence index—the partner's rating of the participant's percentile rank. We present the comparison across condition on this item in Figure 2. This difference was significant, *F*

(1, 39) = 4.85, $p < .05$, even though participants in the two conditions did not differ in actual abilities, $F$ (1, 39) = .48, *ns.*

**Status**. A repeated-measures ANOVA showed that participants in the *overconfident* condition ($M = 4.74$, $SD = 0.85$) also attained higher status in the dyad than participants in the *accurate* condition ($M = 4.10$, $SD = 0.88$), $F$ (1, 39) = 7.80, $p < .01$. Therefore, this provides evidence that overconfidence led to achieving higher status.

We next examined whether partner-rated ability mediated the effect of overconfidence on status using a method suggested by Judd, Kenny, and McClelland (2001).[6] The regression coefficient of the difference score for the mediator was significant ($b = .44$, $SE = .26$, $b* = .26$, $p = .05$), which indicates partner-rated competence mediated the effect of overconfidence on status. The intercept was also significant ($b = -.43$, $SE = .26$, $p = .05$), indicating the effect of overconfidence on status was still significant, controlling for the mediating effect of partner-rated competence (Judd et al., 2001). Therefore, this suggests overconfidence led to status in part because it led to being perceived as more competent.

**Summary**. The partners of individuals induced to be overconfident perceived them as more task competent and accorded them higher status than individuals in the *accurate* condition, who were more accurate in their self-perceptions of ability. Study 3 used an experimental design and thus provided more direct evidence that overconfidence led to higher peer-perceptions of competence, and in turn, higher status. A mediation analysis confirmed that the effect of overconfidence on status was partially explained by peer-perceptions of ability.

**Study 4**

Studies 1 through 3 found that overconfident individuals attained higher status because they were perceived by others to be competent, even when the impression was artifice. But what exactly do overconfident individuals do that makes them appear competent? Study 4 examined the behavioral displays of overconfident individuals.

In this analysis, we utilized Brunswik's (1956) lens model of human perception. According to Brunswik's model, behavioral cues displayed by a target can serve as a kind of lens through which observers indirectly perceive the target's inner characteristics (see Figure 3). For example, someone's smile could serve as the lens through which an observer infers a target's high level of agreeableness. In Brunswik's model, *cue utilization* refers to the link between the observable cue (e.g., smile) and an observer's judgment (e.g., of agreeableness). On the left side of the lens, we will use the term *cue display* to refer to the link between the target's inner characteristic and the behavioral cue. A correlation between an inner characteristic (e.g., agreeableness) and the display of a cue (e.g., smile) indicates that the inner characteristic predicts the display of that cue (e.g., that higher levels of agreeableness predict more smiles).

We hypothesized that the behavioral cues displayed by overconfident individuals would match the behavioral cues observers use to infer competence. Therefore, we were primarily interested in two questions—which behavioral cues are used by observers to infer competence in others, and which behavioral cues *overconfident* people display. Along an exploratory vein, we were also interested in the behavioral cues displayed by individuals who are actually competent. Previous research has shown that observers are not highly accurate in perceiving others' competence (e.g., Minson, Liberman, & Ross, 2011). One possibility is that such low accuracy is due to low cue-display correlations for

actual competence; in other words, individuals who are actually competent might not display the cues that others utilize to infer competence.

Based on a survey of relevant research (e.g., Anderson & Kilduff, 2009; Carli et al., 1995; DePaulo et al., 2003; Driskell et al., 1993; Imada & Hakel, 1977; Ridgeway, 1987; Scherer, London, & Wolf, 1973; Tracy & Robins, 2004), we hypothesized that observers would utilize the degree to which individuals contributed to the group discussion (e.g., the amount they spoke, provided answers and opinions) and their nonverbal demeanor (e.g., confident and factual vocal tone, relaxed demeanor) to infer competence, and that overconfident individuals would display these behavioral cues.

As an open research question, we also examined explicit statements of confidence (e.g., "I am really good at this"). Previous research has shown that such explicit statements lead the individual to be perceived as more competent by others (Jones & Shrauger, 1970; Powers & Zuroff, 1988). Therefore, we expected explicit statements of confidence to be utilized by observers to infer competence. However, explicit statements of confidence also make a person seem unlikeable (Jones & Shrauger, 1970; Powers & Zuroff, 1988). Moreover, to attain status, one cannot be disliked (Homans, 1950; Roethlisberger & Dickson, 1938; Whyte, 1943). Therefore, it was possible that overconfident individuals would not display those behaviors, as they would be best served avoiding such explicit statements.

Finally, we wanted to rule out a possible alternative explanation for our findings. If we were to find that groups perceived overconfident individuals as more competent, it is possible that these perceptions might reflect motivated perceptual biases. For example, prior theorists have suggested that within groups, members tend to defer to more assertive

individuals, and then construct overly positive perceptions of those individuals' competence to rationalize their own passivity (Lee & Ofshe, 1981). Inasmuch as overconfidence relates to assertiveness (Gough et al., 1951), we though it important to address this alternative explanation. We thus asked independent, outside observers to rate participants' competence as well, to help establish that overconfident individuals actually appeared competent to others. Outside observers should feel no need to rationalize any of the group members' passivity, and thus their perceptions should not suffer from any related biases. Therefore, we expected overconfident individuals to be perceived as more competent by outside observers in addition to group members.

**Methods**

   **Participants.**  Participants were 120 students and staff (56% women) at a West Coast university that participated as part of a broader study of small groups (see Kennedy, Anderson, & Moore, 2011). The mean age was 20 years ($SD = 4.1$).  The sample was approximately 60% Asian, 28% Caucasian, 5% Hispanic, 1% African American, and 6% other racial backgrounds.

   **Procedure.** Upon arrival at the laboratory, participants were assigned to groups of four. In the first phase of the study, groups were presented with ten full-body photographs of individuals and asked to estimate each individual's weight separately, using their own answer sheet. This task has been used in previous research on overconfidence (Moore & Klein, 2008). During this first phase, participants were instructed not to speak to each other until everyone had finished with their 10 estimates. The presence of an experimenter ensured compliance with this instruction. In the second phase of the study, group members worked together, while being videotaped, to estimate the weights of the

individuals in the photographs. In the third phase of the study, after completing all 10

estimates as a group, participants privately rated each other's relative competence at the

task.

**Overconfidence**. So far we have measured overconfidence – specifically

overplacement – by focusing on individuals' self-perceived rank relative to all other

participants in the study. Yet individuals attain higher status in a group when they are

perceived as more competent than other *group members* (Berger et al., 1972). For

example, a relatively incompetent person is likely to attain high status in a group of

individuals who are even less competent than him. We thus measured overplacement by

assessing self-perceived performance relative to other group members. Participants

privately reported their perceptions of their own abilities at the task by answering the

item, "Please rank the four members of your group with respect to their ability to

correctly estimate people's weights." Following Moore and Klein (2008), we measured

participants' actual performance in the individual task by calculating how close their

weight estimates were to the correct weight for each photograph.  The participant with the

highest accuracy in estimates received the rank of "1," the next smallest, "2," etc. Only

two groups had members who tied, and both were tied for 3$^{rd}$ rank. As in Study 1, we

regressed participants' self-perceived rank on their actual rank and retained the residual.

**Peer-ranked competence**. Participants privately ranked each group member's

competence. As in Study 3, we conducted a social relations model analysis of these

round-robin peer-perceptions. Group members agreed about one another's task ability, in

that the variance attributable to the person rated was significant (the relative target

variance was .42; Kenny & La Voie, 1984). SOREMO also calculated a *target score* for

each participant, which was essentially his or her average peer-perceived competence. We then reverse-scored these ranking measures so that higher rankings indicated higher peer-perceived competence.

**Ratings of competence made by outside judges**. In selecting outside observers who would rate the group members, we wanted to avoid confounding group membership (i.e., being a group member vs. an outside observer) with the judges' characteristics. For example, if outside observers were older or more educated than group members, they might perceive group members differently than group members perceive each other. To avoid this potential confound, outside observers were selected who were as similar to the group members as possible. Specifically, 120 undergraduate students, recruited from the same subject pool as the target participants, were used as independent peer judges of competence. Four separate independent peer judges were assigned to each videotape. Each judge watched a single group's interaction in its entirety and rated all four group members in their assigned group on the same peer-ranked competence measure on which group members ranked each other.

Recruiting outside observers from a subject pool generated an additional concern, however – namely, that these judges might still be motivated to rationalize the hierarchies they observed in the groups. That is, if group members might be motivated to rationalize their own passivity (Lee & Ofshe, 1981), then subject pool judges might also be similarly motivated, because they might identify with the participants in the videotape. To address this concern, we recruited a second set of judges using Amazon.com's Mechanical Turk (MTurk), an online service that matches "workers" with "requesters" who post jobs to be completed. We uploaded the video recordings to allow online viewing and recruited 300

MTurk judges in total, or 10 separate independent judges per videotape. Each judge watched a single group's interaction in its entirety and ranked each of the four group members in their assigned group on the same competence measure.

The competence rankings made by both sets of outside judges correlated highly with those made by the group members, $\alpha = .71$, indicating that group members' perceptions of each other's competence corresponded to outside judges' perceptions of their competence. This cross-judge consensus helps address the concern that group member's judgments were biased. In light of this agreement across the three sets of judges, we averaged them to form an aggregate measure of *observer-perceived competence*.

**Codes of behavioral cues**. Research assistants who were blind to the research questions coded participants' behavioral cues. We focused on 10 separate behavioral cues (with inter-rater reliability in parentheses). Coders rated the percentage of time participants spoke in the group discussion ($\alpha = .89$, $M = 24.98$, $SD = 6.63$), counted the number of times participants offered an answer before anyone else ($\alpha = .91$, $M = 2.87$, $SD = 2.47$) and after at least one answer had already been provided ($\alpha = .84$, $M = 10.84$, $SD = 5.18$), and provided information relevant to the problem ($\alpha = .92$, $M = 9.12$, $SD = 6.33$). Coders also rated whether the participant had a confident and factual vocal tone (vs. uncertain and wavering vocal tone; $\alpha = .60$, $M = 4.48$, $SD = 1.52$), seemed calm and relaxed or nervous and anxious ($\alpha = .60$, $M = 1.88$, $SD = 1.16$), and whether the person showed constricted posture and took up little space or showed expanded posture and took up a lot of space ($\alpha = .67$, $M = 4.08$, $SD = 1.26$). In addition, coders counted the number of times the participant made an explicit statement about his or her ability ($\alpha = .81$, $M = .$

33, $SD = .65$), the ease or difficulty of the task ($\alpha = .92$, $M = .48$, $SD = 1.05$), and his or her certainty in his or her estimate ($\alpha = .83$, $M = 1.58$, $SD = 2.19$).

**Results**

Consistent with the findings from Studies 1 through 3, overconfident individuals were perceived by others as more competent, $r\ (118) = .29$, $p = .002$. Again, it is worth noting that this index of overconfidence reflects bias in self-perceptions. Consequently, the correlation reflects the relationship between positive bias in self-perception and others' ratings of one's abilities. Drawing on the logic of Brunswik's (1956) lens model, we next examined which behavioral cues observers utilized to make inferences about participants' competence and the degree to which overconfident individuals displayed those cues.

**Cue utilization**. The cue-utilization correlations in the rightmost side of Table 2 reflect the relationships between the observers' perceptions of competence and the behavioral cues participants displayed. The behavioral cues are presented in descending order of the magnitude of their cue-utilization correlation.

Consistent with expectations, observers perceived participants to be more competent when participants spoke more, used a more confident and factual vocal tone, and provided more information relevant to the group's problems. In fact, these three cue-utilization correlations were quite high, all above $r = .50$, suggesting observers utilize these cues a great deal when inferring others' competence. In addition, observers perceived participants to be competent when participants exhibited an expanded posture, showed a calm and relaxed demeanor, offered more answers (either first or after another group member had already done so), and made more statements about the certainty of

their answers. It is interesting to note that observers did not utilize a target's direct statements of his or her own ability or of the ease of the task. It seems that observers relied more heavily on indirect signals of confidence, such as more contributions and a confident nonverbal demeanor, than on explicit statements of confidence.

**Cue display**. The correlations in the left-hand section of Table 2 reflect the relationships between participants' inner characteristics – both their overconfidence and actual competence – and the behavioral cues they displayed. Consistent with our expectations, overconfident individuals tended to display most of the behavioral cues utilized by observers to infer competence: They spoke more, used a confident and factual vocal tone, provided more information relevant to the problem, exhibited a calm and relaxed demeanor, and offered answers first. Although overconfident individuals did not offer answers after another group member had already done so, this was likely because they provided answers first; those two behavioral cues correlated negatively, $r$ (128) = -.33, $p$ < .001. The only surprising null cue-display correlation was thus for expanded posture.

Along an exploratory vein, we next examined explicit statements of confidence. Overconfident individuals did not make explicit statements about their own abilities, the ease of the task, or their certainty in their answers. These non-significant findings are interesting, given previous findings that suggest such explicit statements can lead to lower levels of liking (Jones & Shrauger, 1970).

Finally, it is interesting to note that none of the cue-display correlations were significant for actual competence. This suggests competent individuals did not display the behavioral cues that signal competence to others and might help shed light on why

competence is so difficult to detect in others (e.g., Ames & Kammrath, 2004; Minson et al., 2011). If individuals who are actually competent do not display the behaviors that signal competence to others, then observers will have difficulty recognizing their competence. In fact, our overconfidence index predicted the behavioral cues more strongly than did the index of actual competence. Overconfident individuals behaved in ways that conveyed competence more convincingly than did individuals who are *actually* competent.

**Summary**. Using a Brunswik (1956) lens model analysis, we found that overconfident individuals have a behavioral signature that, to observers, looks like actual competence. This helps explain why overconfident individuals are seen by others as competent, even when they lack competence. In fact, overconfident individuals more convincingly displayed competence cues than did individuals who were actually competent.

## Study 5

Thus far, we have provided evidence that overconfident individuals appear more competent to others and attain higher status. However, to support the argument that overconfidence pervades self-perception *because* of its status benefits, it is also necessary to show that the drive for status actually promotes overconfidence. Study 5 thus tested whether individual differences in the desire for status predict individual differences in overconfidence. If such an association exists, it would suggest that not only does overconfidence lead to social benefits, but also that the desire for those benefits promotes overconfidence.

Fortunately, there exists a well-established and widely used self-report measure that is appropriate for our needs: Jackson's need for dominance measure from the Personality Research Form (PRF; 1999). The need for dominance refers to individual differences in the desire to occupy roles of prestige, influence, and authority (Murray, 1938); items on the measure ask individuals how much they desire to be in positions of high status, and wish to have control and influence in social situations. We hypothesized the need for dominance predicts overconfidence.

We also wanted to rule out an alternative explanation. If we were to find an association between the need for dominance and overconfidence, it is possible that there is nothing special about the need for dominance or status per se; individuals who are more motivated to succeed in general might tend to be more overconfident. To rule out this possibility, we tested whether the need for dominance uniquely predicts overconfidence, among other potentially relevant psychological needs.

Specifically, we focused on two other measures from the PRF: the need for affiliation and the need for achievement (Jackson, 1999). The need for affiliation assesses the degree to which individuals desire to engage in social activities such as parties or collaborative hobbies, have friends, and meet new people. The need for achievement focuses on how much individuals aspire to achieve in their field and work hard toward accomplishing difficult goals. We did not expect that the need for affiliation would predict overconfidence because, according to circumplex models of human behavior, status and affiliation concerns are orthogonal (e.g., Wiggins, 1979). The desire to connect with others should thus be uncorrelated with self-perceptions of expertise or task competence. We also did not expect that the need for achievement would predict

overconfidence. Prior research suggests that overly positive self-perceptions might not facilitate achievement (e.g., Robins & Beer, 2001). Therefore, those who seek to achieve might not be motivated to engage in overconfidence; such a practice would not further their goals.

**Method**

      **Participants**. Our sample included 77 individuals from around the United States (60% male). The data were collected online, using MTurk. The average age was 36 years ($SD = 11.39$). Participants were asked to select all categories that comprised their ethnic background; 81.8% selected White, 6.5% selected African-American, 3.9% selected Latino, 6.5% selected Asian-American, and 1.3% selected "other."

      **Procedure**. Participants first completed measures of demographic and individual difference variables. They were then told they would be working with three other people, via an on-line chat room, who were also currently participating in the study. Before participants were to join this ostensible group, however, they completed a version of the task individually. The individual task involved 10 trials. For each trial, they estimated the average of the seven two-digit numbers simultaneously displayed for two seconds. After completing all ten trials, they estimated their abilities on the task. Finally, participants were told there would actually be no group task, thanked, and debriefed.

      **The needs for dominance, affiliation, and achievement**. Jackson's Personal Research Form (PRF; Jackson, 1999) includes a variety of needs scales, each containing 20 statements that are rated as either "true" or "false." We coded answers indicating weaker or stronger desire as 1 and 2, respectively. The need for dominance scale showed high internal reliability ($\alpha = .90$, $M = 1.52$, $SD = 0.31$), as did the need for affiliation ($\alpha$

= .86, *M* = 1.41, *SD* = 0.28) and need for achievement (α = .76, *M* = 1.63, *SD* = 0.22)

measures.

**Big Five personality dimensions**. As in Study 2, we controlled for extraversion

and neuroticism because these variables have both been linked to overconfidence

(Schaefer et al., 2004) and to the attainment of status (Anderson et al., 2001). We again

used the 44-item Big Five Inventory (BFI; Benet-Martinez & John, 1998; John &

Srivastava, 1999). All five BFI scales showed internal consistency, including extraversion

(α = .88, *M* = 2.83, *SD* = 0.85), agreeableness (α = .85, *M* = 3.77, *SD* = 0.64),

conscientiousness (α = .88, *M* = 3.70, *SD* = 0.72), neuroticism (α = .87, *M* = 2.85, *SD* =

0.80), and openness (α = .80, *M* = 3.70, *SD* = 0.60).

**Overconfidence.** After participants completed 10 trials of the numbers task, they

learned that an answer would count as correct if it fell within five points of the actual

answer. They were asked to estimate their percentile rank relative to the other participants

in the study, using the same scale from Studies 1 and 2 (*M* = 54.18, *SD* = 25.02). We also

asked them where they thought they would rank (in terms of how many questions they

answered correctly) among the four-person group in which they were about to work.

They answered using a scale of 1 (t*he best in my group*) to 4 (*the worst in my group*), *M* =

2.56, *SD* = 0.79. We then reverse-scored this measure such that higher scores indicated

better relative performance. As expected, these two self-perceptions of relative ability

correlated highly with each other, *r* (75) = .70, *p* < .001.

We scored participants' actual performance on the task using the method

described to them (*M* = 4.79, *SD* = 2.10). We then transformed their performance scores

into percentile rankings to allow us to score *overplacement*. In addition, although we did

not actually assign participants to groups, we wanted to estimate what participants' rank would have been if they had been assigned to groups. We thus broke all participants up into groups of four, according to the time in which they participated, and ranked them within each group. The two measures of actual rank in relative performance correlated highly with each other, $r$ (75) = .77, $p < .001$.

As in Studies 1 and 2, we regressed participants' self-perceived rank on their actual rank, and then retained the residual – for both their self-perceived percentile rank relative to all other participants, and their self-perceived rank relative to participants with whom they would have been assigned to a group. These two measures of overconfidence correlated highly with each other, $\alpha = .81$, $r$ (75) = .68, $p < .001$, and thus we combined them.

**Results and Discussion**

A simultaneous regression equation with the eight predictors, including the three need measures and all Big Five dimensions, appears in Table 3. As shown, out of all the independent variables, the need for dominance was the only significant predictor of overconfidence and the link between the need for dominance and overconfidence was substantial, with a standardized beta of .42. This suggests that individuals who more strongly desired positions of higher status and influence tended to be more overconfident in their task abilities.

In contrast, the need for affiliation did not predict overconfidence. Therefore, desiring stronger connections with others did not lead to a stronger tendency to engage in overconfidence. Perhaps more noteworthy, the motivation to achieve also did not predict overconfidence in one's task abilities. It seems that the desire for social success, but not

necessarily the desire for task success per se, predicted overconfidence. Finally, it is also important to note that the relation between the need for dominance and overconfidence remained significant after controlling for all other dimensions, including personality dimensions.

**Study 6**

Study 6 further tested the idea that the desire for status drives overconfidence, and makes two key contributions over and above the other five studies we report. First, Study 6 employed an experimental design and manipulated the desire for status. It used an established procedure that asks participants to imagine working for a prestigious company and aspiring to move up the hierarchy (Griskevicius et al., 2009). We then asked participants their self-perceived percentile ranking on a host of dimensions related to attaining status in a business context. We reasoned that through random assignment, participants in each experimental condition would not differ from each other in actual skills and abilities relevant to business contexts. Therefore, any differences in self-perceived abilities would be due to the status manipulation, rather than differences in actual abilities.

Second, although there is consistency across contexts in the personal characteristics that lead to higher status (Lord et al., 1986), those characteristics can vary markedly from one group to another (Anderson, Spataro, & Flynn, 2008). For example, quantitative skills will likely be more important to attaining status in a group of engineers than in a fraternity. This suggests that being overconfident on dimensions that lead to status in one context will not necessarily help individuals attain status in another context (e.g., Anderson et al., 2008). Being overconfident in one's quantitative skills would not

help one attain status in a fraternity (and in fact might hurt one's status). Therefore, a persuasive demonstration would show that the desire for status in a given context leads to overconfidence primarily on dimensions that facilitate status attainment in that context, but *not* on dimensions that do not lead to status attainment in that context.

**Method**

**Participants**. Our sample included 68 individuals from around the United States (59% male). We recruited these participants online via MTurk. The average age was 33 years ($SD = 10.16$). Participants were asked to select all categories that comprised their ethnic background; 82.4% selected White, 4.4% selected African-American, 2.9% selected Latino, 8.8% selected Asian-American, and 1.5% selected "other."

**Design and procedure**. The study had two between-participant conditions, a status-motive induction and a control condition, which were based on previous research (Griskevicius et al., 2009; Griskevicius et al., 2010), and two within-participant conditions, *business-relevant* and *irrelevant* personal characteristics. All participants first completed measures of demographic variables. They were then asked to read a story and imagine themselves in the scenario and feel the emotions and feelings that the person is experiencing. Participants in the *status* condition read a story in which they were motivated to attain status in a work context. Participants in the *control* condition read a story in which they lost and then found their wallet. Finally, participants reported their percentile ranking on a host of ability dimensions, some of which were relevant to attaining status in the work context described in the status prime, and some of which were irrelevant. A check at the end of the study showed that no participant correctly guessed the nature of the study or its hypotheses.

**Status and control primes**. In the *status* prime, participants read a short story of about 400 words that was adapted from an established status motive manipulation (Griskevicius et al., 2009; Griskevicius et al., 2010). In the story, participants imagine that they recently graduated from college and decided to work for a prestigious company. The job pays well and offers them the chance to ascend the hierarchy. On their first day at work, their boss says that if they do well, they will be put on the "fast track" to the top.[7] The *control* prime was also based on Griskevicius et al. (2009), and asked participants to imagine being at home and realizing that their wallet is missing. They search for the wallet and the story ends as the person finds it.

To ensure the adapted status prime elicited the desire for status, we pilot-tested both primes on a separate group of participants. Forty-four participants read either the *status* or the *control* prime and then rated the extent to which they desired higher social status, regard, prestige, and respect from others ($\alpha = .87$). To ensure the status prime elicited a desire for status specifically, but not a desire for better social standing in general, participants also rated the extent to which they desired to belong: to be liked by others, accepted by others, and included in social groups ($\alpha = .87$). Relative to the control story, the status story elicited a stronger desire for status on a 1–7 scale, $p = .033$) but not a stronger desire to belong (5.79 vs. 5.39, $p = .200$).

**Self-perceived competence**. We asked participants to rate their percentile ranking on 15 skills and abilities that seemed relevant to attaining higher status in work contexts. We focused on task-related skills (intelligence, analytical abilities, critical thinking skills, problem solving skills, innovativeness, general mental abilities, ability to focus, multi-tasking skills, creativity), as well as social-emotional skills (social skills, ability to work

in teams, managing conflict, handling stress, masking emotions). We also asked

participants to rank their percentile on six skills and abilities that seemed irrelevant to

attaining status in work contexts (driving ability, athletics, general hand-eye coordination,

general physical reflexes, musical ability, artistic skills). The 15 business-relevant skills

correlated with each other ($\alpha = .85$) as did the six irrelevant skills ($\alpha = .70$).

To establish that the business-relevant skills would be deemed more relevant to

attaining status in that context than the irrelevant skills, we pilot tested all dimensions on

a separate sample of 44 participants. (This sample was distinct from the other pilot-test

sample described above.) These participants read the status prime story and were asked to

rate each of the skills and abilities on a scale from 1 (*unimportant to performing in the*

*work context described above*) to 7 (*extremely important to performing in the work*

*context described above*). A factor analysis showed that the business-relevant skills all

loaded onto the first factor, and the irrelevant skills all loaded onto other factors. We thus

combined all 15 business-relevant skills ($\alpha = .97$) and then combined all irrelevant skills

($\alpha = .72$). As expected, the business-relevant skills ($M = 5.99$) were seen as more relevant

to attaining status than the irrelevant skills ($M = 2.80$, $p < .001$).

**Results and Discussion**

We submitted the self-perceived competence aggregates to a 2 x 2 mixed-model

ANOVA in which prime (*desire for status* vs. *control*) served as the between-participants

factor and skill relevance (*relevant* vs. *irrelevant to the prime context*) served as the

within-participants factor. There was no main effect for prime condition, $F (1, 66) = 0.23$,

$p = .636$, but there was a main effect for skill relevance $F (1, 66) = 89.78$, with

individuals perceiving themselves to have superior work-relevant skills ($M = 70.47$, $SD = 10.95$) than irrelevant skills ($M = 54.63$, $SD = 17.14$).

More germane to our hypotheses, however, was the emergence of a significant interaction between prime condition and skill relevance, $F (1, 66) = 5.03$, $p = .028$. Specifically, individuals induced to *desire status* perceived themselves to possess higher business-relevant skills ($M = 72.89$, $SD = 12.24$) than individuals in the *control* condition ($M = 67.73$, $SD = 8.67$), $t (66) = 2.02$, $p = .047$, but not to have higher skills irrelevant to the business context ($M = 53.57$, $SD = 18.75$) than those in the *control* condition ($M = 55.80$, $SD = 15.34$), $t (66) = .53$, $p = .595$, *ns*. Therefore, the effect of the status prime was stronger on only those skills and abilities relevant to attain status in the business context. Inducing the desire for status using a business-related prime did not make participants more confident on skills and abilities that were irrelevant to the business context.

## General Discussion

### Summary of Findings

The six studies we present aimed to test a status-enhancement account of overconfidence, which suggests that overconfidence biases self-judgment because it helps individuals attain higher status. Studies 1 through 3 supported this account by showing that, in task dyads and groups, overconfident individuals were perceived by others as more competent and were, in turn, afforded higher status. This finding emerged across different task settings (i.e., geography tests, person perception tasks, and student project teams), using different measures of overconfidence (i.e., comparing self-perceived to actual performance and a well-established individual difference measure), and in dyads as well as groups. Moreover, it was observed in contexts in which individuals worked

closely together for several weeks, suggesting that these social benefits of overconfidence still existed over time. Study 4 examined the behavioral signature of overconfident individuals more closely and found that the behaviors displayed by overconfident individuals are those used by others to infer competence.

Studies 5 and 6 further supported the status-enhancing account by showing that the desire for status predicted higher levels of overconfidence. More specifically, Study 5 showed that naturally occurring individual differences in the need for dominance predicted overconfidence. This finding remained even after controlling for personality dimensions. Moreover, the need for dominance uniquely predicted overconfidence; the needs for affiliation and achievement did not predict overconfidence. Study 6 used an experimental design to show that the desire for status caused higher levels of overconfidence. It was also found that the desire for status promoted overconfidence only on abilities that would lead to status in the specific social context under consideration.

The current studies had a number of strengths. First, the data were extensive, involving 1172 individuals total: 664 participants, 519 of whom interacted in dyads or groups, which included diverse samples of undergraduate students, MBA students, and working adults, in addition to 420 independent judges and 88 pilot test participants. Second, the studies used a wide array of data sources, including self-reports of abilities, objective indices of actual ability and knowledge, peer-ratings of competence and status, peer-assigned grades, independent ratings of videotapes by outside judges, and behavioral codes by trained research assistants. Importantly, by including operational measures of actual ability, we could distinguish between overconfidence and justifiably high confidence. This provides assurance that actual ability was not driving a spurious relation

between self-confidence and status. Third, the studies also used a diverse array of study designs, including dyadic, group, laboratory, field, short-term and longer-term, correlational and experimental methods. Fourth, we were able to rule out many alternative explanations for our findings by controlling for a number of possible third variables. Optimism, extraversion, dominance, and neuroticism did not account for our effects.

Although the current studies had a number of strengths, there were of course limitations. We measured overconfidence with well-established measures that are standard in the overconfidence literature (e.g., Kruger & Dunning, 1999; Krueger & Mueller, 2002; Larrick et al., 2007; Moore & Healy, 2008). However, we cannot know with certainty whether overconfident individuals truly believed that they were highly competent, or whether they were merely reporting what they wished to believe about themselves (and expressing to others a demeanor that reflected their desired self). Were "overconfident" participants genuinely overconfident, or were they merely engaging in impression management?

Previous research gives us reason to suspect that the overconfidence we observed was genuine. For example, von Hippel and Trivers (2011) review a body of findings suggesting that overconfidence emerges unconsciously, without intent or awareness. Overconfidence measured under similar conditions to the ones we used emerges even when the stakes are high and aligned to reward accuracy (Ehrlingeret al., 2008; Hoelzl & Rustichini, 2005; Williams & Gilovich, 2008). Moreover, our overconfidence measures were based on questions completed privately, and participants were explicitly told their answers were anonymous and would not be shared with other participants. Under similar

experimental conditions, prior work has directly shown that overconfidence was a product of genuine delusions about the self and not impression management concerns (Hoorens, 1995; Paulhus et al., 2003).

Because our studies primarily used laboratory settings they allowed for relatively greater methodological control and precision in measures than field studies typically afford. However, they also limit the ecological validity of the findings. Although the student project groups might be deemed "real world" in that they were not constituted for study purposes and involved real stakes (e.g., grades, reputation with classmates), it is possible that the same findings might not emerge in other real world teams where the stakes are higher. For example, in organizational teams, groups might be more skeptical of teammates who seem highly confident because their own job career success depends on the team's performance. However, task contexts in organizations often do not allow for perfect detection of others' competence. Therefore, we expect that the findings we observed would replicate in organizations as well. Future research should explore this issue by examining other naturally occurring teams.

**Contributions to the Overconfidence Literature**

The current findings make two distinct contributions to the literature on overconfidence. First, our findings speak to arguments regarding the origins of overconfidence. In explaining why overconfidence is so pervasive in judgment and decision-making, many theorists have focused on limitations in human cognition (Miller & Ross, 1975), or focused on the psychological benefits that overconfidence provides, such as higher self-esteem (Kunda, 1987). In this paper, we consider the possibility that people engage in overconfidence because of the social benefits it provides. More

specifically, humans might have the tendency to form false self-beliefs because doing so helps convince others of their positive value. While empirical research has examined the first two explanations for overconfidence, and some intriguing recent theories speculate about the social role of overconfidence (Johnson & Fowler, 2011), our studies provide some of the first empirical investigations of this approach.

In addition, overconfidence has been widely considered an impediment to individual success, hampering work performance, undermining learning and development, and threatening health (Dunning et al., 2004). While we agree that overconfidence can have these effects, the current findings suggest that the effects of overconfidence are likely more nuanced. Indeed, we found that overconfidence helped people be perceived as more competent by peers and gain higher status. Thus, whether overconfidence brings benefits or costs likely depends on the person, the context, and the outcome under consideration. This notion fits more broadly with others' arguments that the effects of overly positive self-perceptions are mixed (e.g., Kwan et al., 2004; Paulhus, 1998; Robins & Beer, 2001).

**Contributions to the Status Literature**

The current findings have a number of important theoretical implications for the status literature as well. First, they inform us about the psychology of those who possess high status. One commonly asked question about those who possess status is does their behavior reflect their positions or their preexisting personalities? For example, in the case of narcissistic CEOs (Chatterjee & Hambrick, 2007), did their status make them more narcissistic or did their narcissism help them rise in the hierarchy? With regard to overconfidence, our findings suggest that the answer might be "both." While previous

research suggests that higher rank leads to inflated self-perceptions (e.g., Pfeffer, Cialdini, Hanna, & Knopoff, 1998; Sachdev & Bourhis, 1987), our findings suggest that overconfident individuals are also more likely to attain status in the first place.

Our findings also help us understand some of the systematic biases and inefficiencies that exist in status distribution systems. That is, groups and organizations strive to put their most competent members in charge (Berger et al., 1972; Lord, 1985). However, as we know from prior research – and perhaps personal experience – groups and organizations frequently get it wrong. Individuals who are not the most competent sometimes take charge, and highly talented individuals are often relegated to the bottom of the hierarchy (Anderson & Kilduff, 2009; Berger et al., 1980). How does this occur? The current findings suggest that such "dysfunctional" hierarchies can emerge in part because it is often difficult for group members to ascertain each other's true competence levels. In such contexts, status is based on each member's self-perceived abilities, which may or may not be based on his or her actual abilities.

The current findings also contribute to the resurgent social-psychological literature on status and power, which has demonstrated many ways in which possessing positions of high rank shapes individuals' thoughts, emotions, and behavior (for reviews, see Gruenfeld & Tiedens, 2010; Keltner et al., 2003). Much of that research randomly assigns participants to positions of high or low status and authority. Such study designs afford greater control and help establish causality, but they might also lead us to underestimate the differences in behavior patterns that exist in the real world between high- and low-ranking individuals. For example, prior studies have shown that individuals randomly given higher rank prefer riskier courses of action (Anderson &

Galinsky, 2006; Keltner et al., 2003). Our findings suggest that in the real world, overconfident individuals are more likely to achieve positions of status. And because overconfidence also promotes risk-taking (e.g., Chatterjee & Hambrick, 2007), the actual relation between high rank and risk-taking might have been underestimated by those prior studies. People in positions of status and power – corporate or government leaders for example – would be subject to two forces that encourage them to take risks: their elevated social position and their pre-existing propensity for overconfidence. Our findings therefore suggest that gaining a clearer picture of the magnitude of differences across high- and low-ranking individuals requires field studies of individuals in real world high- and low-ranking positions as well as laboratory studies.

**Future Directions**

The current findings generate a number of questions for future research. First, a critical issue for future research to understand is the boundary conditions for the effects we observed here. When will overconfidence lead to social benefits such as the ones we observed, when will it not, and when will it lead to social costs? One possibility is that overconfidence leads to social benefits only when others are uncertain about an individual's actual abilities. As Swann and Ely (1984) found, individuals' self-perceptions influenced perceivers' ratings of them only when the perceivers were uncertain about their preexisting views of the individual; in contrast, when perceivers were more certain in their view of the individual, individuals' self-views had no effect. This suggests that overconfidence might not have the same status benefits when others feel certain in their evaluation of the individual's abilities.

Another possibility is that overconfidence does not help individuals attain higher status in social contexts where others are highly confident (e.g., a cohort of highly confident law students at a prestigious university). We tested this idea empirically by going back through our studies and examining whether the effects of overconfidence were moderated by others' level of confidence; that is, was the effect of overconfidence mitigated when partners or teammates were highly confident? We did not find a single significant interaction, suggesting that others' confidence did not moderate the effect of individuals' overconfidence. Nonetheless, future research should examine this question further, as each of these task settings did not evoke extremely high levels of confidence among participants.

In Studies 1, 2, and 3, we did not find any evidence for a curvilinear relation between overconfidence and status attainment. However, curvilinear effects are notoriously difficult to obtain, due to lack of statistical power (McClelland & Judd, 1993). Moreover, our studies only examined variation in overconfidence within a reasonable naturally-occurring range. It is thus still possible that the status-related benefits of overconfidence are lower for individuals who are extremely overconfident than those who are only moderately overconfident (e.g., Baumeister, 1989). It is important that future research examine this issue further.

Overconfidence might also have very different results in different cultures. Our results were also obtained using mostly participants from the United States. As these participants came from a relatively individualistic Western culture, it is important to test whether our results differ for individuals in other cultures. For example, overconfidence might not have the same benefits in Eastern cultures, especially those that value humility

and self-effacement (Heine, Lehman, Markus, & Kitayama, 1999). It is worth noting that none of our findings were moderated by East Asian ethnicity, even if differences in ethnicity cannot be equated to differences in culture.

A related issue is that overconfidence might have high costs in other areas, even if it benefits the individual socially. For example, overconfidence can lead to faulty decision-making, such as launching into overly risky ventures (for a review, see Dunning et al., 2004). While overconfident individuals might be perceived as more competent and afforded higher status, they might make disastrous decisions for themselves and their groups. An important question, therefore, is when these costs curtail the tendency toward overconfidence.

Third, more research needs to test the status-enhancement account of overconfidence. For example, one counterargument to the status-enhancement account is that the potential social benefits of overconfidence are outweighed by its potential social costs. It is possible that if overconfident individuals are "exposed" as overconfident and in fact not highly competent, they will be socially ostracized and punished (Anderson et al., 2006). If so, this would suggest that the expected value of overconfidence is unlikely to be positive – and casting doubt on the status-enhancement account as a whole. Future research should test whether overconfidence is punished after others learn of one's actual ability levels.

Finally, if overconfidence provides the individual with social benefits, an important question is why some individuals exhibit overconfidence while others exhibit too little confidence (e.g., Dunning et al., 2003). Our Studies 5 and 6 suggest that differences in overconfidence might be related to individual differences in the desire for

status. While most individuals desire higher status, some actually seem to prefer lower status (Josephs et al., 2006; Schmid Mast et al., 2010; Smith et al., 2008). Therefore, too little confidence might stem from a preference for lower status. However, it is also possible for *underconfidence* to result from error. That is, as long as people's beliefs about their relative placement is not perfectly correlated with their actual percentile rankings, then some people will erroneously believe that they are worse than they actually are (Moore, 2007). Even the greatest motivation toward overconfidence will not be able to eliminate error in people's sense of their relative placement.

We conclude by noting the importance of social status. Those individuals among us who are elevated to positions of status wield undue influence, have access to more resources, get better information, and enjoy a variety of benefits that the rest of us can only view with envy. One of the most basic questions for students of human social groups, organizations, and societies, is the question of how we select those for elevated to positions of status. Although we may seek to choose wisely, we are often forced to rely on proxies for ability, such as individuals' confidence. In so doing, we, as a society, create incentives for those who would seek status to display more confidence than their actual ability merits. The idea that overconfidence might pervade human self-perception because of its social benefits generates new hypotheses and directions for future research.

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**Footnotes**

1. Prior research has distinguished *overestimation* from *overplacement* (Larrick, Burson, & Soll, 2007; Moore & Healy, 2008). Someone who believes he has answered ten items correctly when in fact he answered two correctly has *overestimated* his score. *Overplacement*, in contrast, involves overestimating one's rank in ability relative to others. A student who believes she ranks highest among her classmates when she actually ranks in the 30th percentile has overplaced her performance. In group contexts, because individuals' status is based on perceived abilities relative to others (Berger et al., 1972; Ridgeway, 1984), overplacement is the most relevant form of overconfidence.

2. The main effect of overconfidence in a sample is typically indexed by the simple difference between the self-perception and objective performance (Gigerenzer & Hoffrage, 1995; Harvey, 1997; Hoffrage, 2004; Larrick, Burson, & Soll, 2007). To understand whether individuals are overconfident on average, one can compare average self-perceptions to average objective performance (e.g., John & Robins, 1994). However, to measure individual differences, the use of difference scores has been widely criticized because difference scores are unreliable and because they tend to be confounded with the variables that comprise the index (e.g., Cohen, Cohen, West, & Aiken, 2003; Cronbach & Furby, 1970; Edwards, 1994; John & Robins, 1994; Paulhus, 1998). They are unreliable because they add error variance both from actual performance and from beliefs about performance. In the present study, the simple difference score (with higher scores indicating more overconfidence) would necessarily be negatively correlated with performance on the task, so that individuals performing worse would appear to be more overconfident than individuals performing better. To provide an unconfounded measure

of overconfidence for analyses on individual differences, scholars suggest regressing participants' actual performance onto their self-evaluations and retaining the residuals of the self-evaluations (Cohen et al., 2003; Cronbach & Furby, 1970; DuBois, 1957; John & Robins, 1994). The residual score captures the variability in self-perceived rank after the variance predicted by actual rank has been removed. We thus used such an index in Study 1.

3. Twelve participants did not provide ratings of their fellow group members and were thus left out of the SRM analysis. However, because their fellow group members rated them, we were able to calculate the average rating given to them, and then subtract the group mean on that dimension to make it independent of group membership, similar to SRM-derived scores.

4. The photographed targets and the data for each target's "true" personality were obtained from Daniel Ames. Each target's "true score" was derived by averaging the ratings of the target made by him/herself and by eight knowledgeable informants.

5. In pilot tests, no participant answered more than 26 ratings correctly out of the first 50, so 37 seemed an unattainable yet plausible score. We considered trying to manipulate overplacement by telling participants that their scores put them either at a high or low percentile rank. However, doing so would have meant providing some in the *overconfident* condition overly negative, rather than overly positive, feedback. In every sample, there must be people who score above the 95th percentile. Telling those people that they scored in the 95th percentile would provide overly negative feedback. To avoid this problem we conducted pilot tests to examine whether providing participants with feedback about their absolute performance scores would also manipulate their

overplacement (see Moore & Klein, 2008). These pilot tests confirmed that such a method was effective, so we used it in Study 3.

6. According to Judd, Kenny, and McClelland (2001), to establish mediation in a repeated measures design such as this, one calculates whether the experimental manipulation affected both the dependent variable and proposed mediator, which we have already done. One then calculates difference scores for the dependent variable and the proposed mediator across the two experimental conditions, and calculates a summed score for the proposed mediator across the two conditions; this summed score is then centered. One then predicts the dependent variable difference scores with the mediator difference scores and the mediator summed (and centered) scores.

7. We shortened the original story to help avoid two potential confounds. First, to avoid inducing competitive feelings more generally, and target the desire for status more specifically, we deleted part of the original prime that spoke of a competition for promotion with two other newly hired employees. Second, to avoid directly priming higher levels of confidence, we deleted a part of the original prime that spoke about the protagonist trying to boost his or her confidence. We also shortened this control prime so that it would be of comparable length as the status prime.

Table 1.

*Study 2. Coefficients for Regression Models Corresponding to Effect of Overconfidence on Peer-Rated Status and Peer-Assigned Grade.*

| | Status | | Grade | |
|---|---|---|---|---|
| | *B* | *SE B* | *B* | *SE B* |
| Overconfidence | .32* | .07 | .08* | .03 |
| Accuracy | .27* | .05 | .06* | .02 |
| Optimism | -.01 | .03 | -.01 | .01 |
| Trait Dominance | -.02 | .03 | -.02 | .01 |
| Extraversion | .04 | .06 | .01 | .02 |
| Neuroticism | -.01 | .06 | -.02 | .02 |

\* *p* < .01

Table 2

*Study 4. The Behavioral Signature of Overconfidence: A Brunswik (1956) Lens Model Analysis*

| Cue-display correlations | | | Cue-utilization correlations |
|---|---|---|---|
| Overconfidence | Actual Competence | Behavioral cue ("lens") | Observer-perceived competence |
| .25** | .17 | Percent of time spoke | .59** |
| .29** | .13 | Confident and factual vocal tone | .54** |
| .19* | .03 | Provided information relevant to problem | .51** |
| .00 | .15 | Expanded posture | .37** |
| .22* | .02 | Calm and relaxed demeanor | .34** |
| -.10 | .16 | Offered an answer later | .24* |
| .27** | -.04 | Offered an answer first | .21* |
| .17 | .12 | Statements of certainty in estimate | .21* |
| .07 | .10 | Statements about ease or difficulty of task | .18 |
| -.14 | -.06 | Statements about one's own competence | .09 |

* $p < .05$, two-tailed.   ** $p < .01$, two-tailed.

Table 3

*Study 5: Need for Dominance Predicts Overconfidence*

| Variable | *b* | *SE* | β | *t* |
|---|---|---|---|---|
| (Constant) | -1.45 | 1.55 | | -0.94 |
| Need for Dominance | **1.22** | **0.46** | **.42** | **2.64*** |
| Need for Affiliation | 0.22 | 0.60 | .07 | 0.37 |
| Need for Achievement | -0.11 | 0.58 | -.03 | -0.19 |
| Extraversion | -0.26 | 0.21 | -.25 | -1.25 |
| Agreeableness | 0.06 | 0.20 | .04 | 0.27 |
| Conscientiousness | 0.17 | 0.17 | .14 | 1.01 |
| Neuroticism | -0.05 | 0.16 | -.05 | -0.32 |
| Openness | -0.13 | 0.19 | -.08 | -0.68 |

*Note.* Statistics appearing in bold represent tests of our hypotheses.
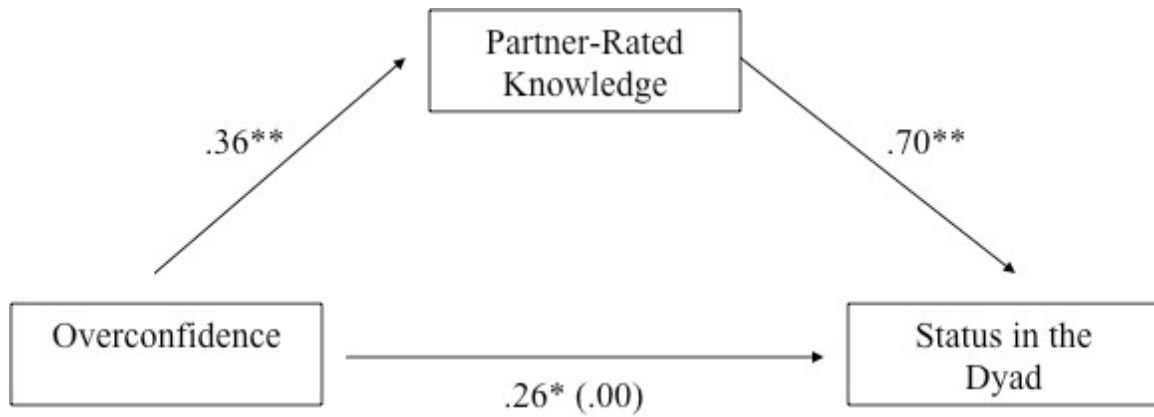
* $p = .010$.

*Figure 1.* Partner-rated knowledge mediated the relationship between overconfidence and status in the dyad (Study 1).
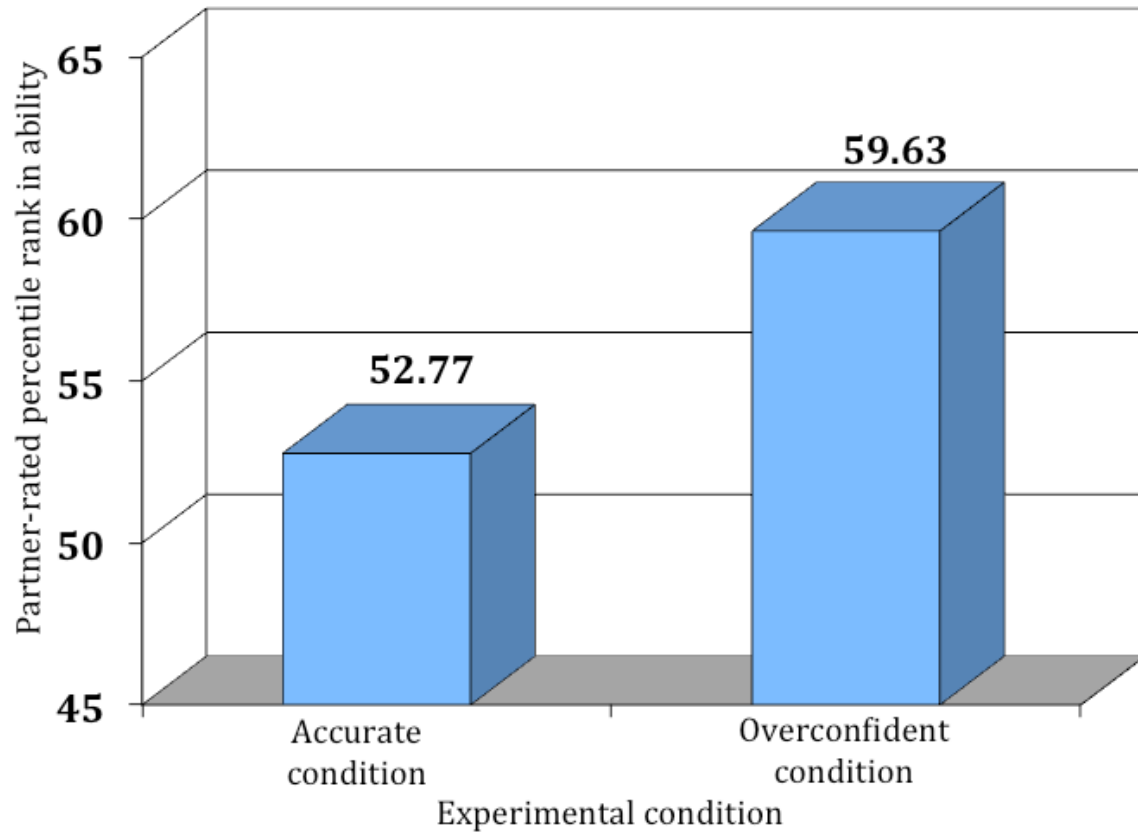
*Figure 2.* Participants provided with overly positive performance feedback, who engaged in overconfidence, were perceived as more competent by their partners than participants provided with accurate performance feedback, who more accurately perceived their ability (Study 3).
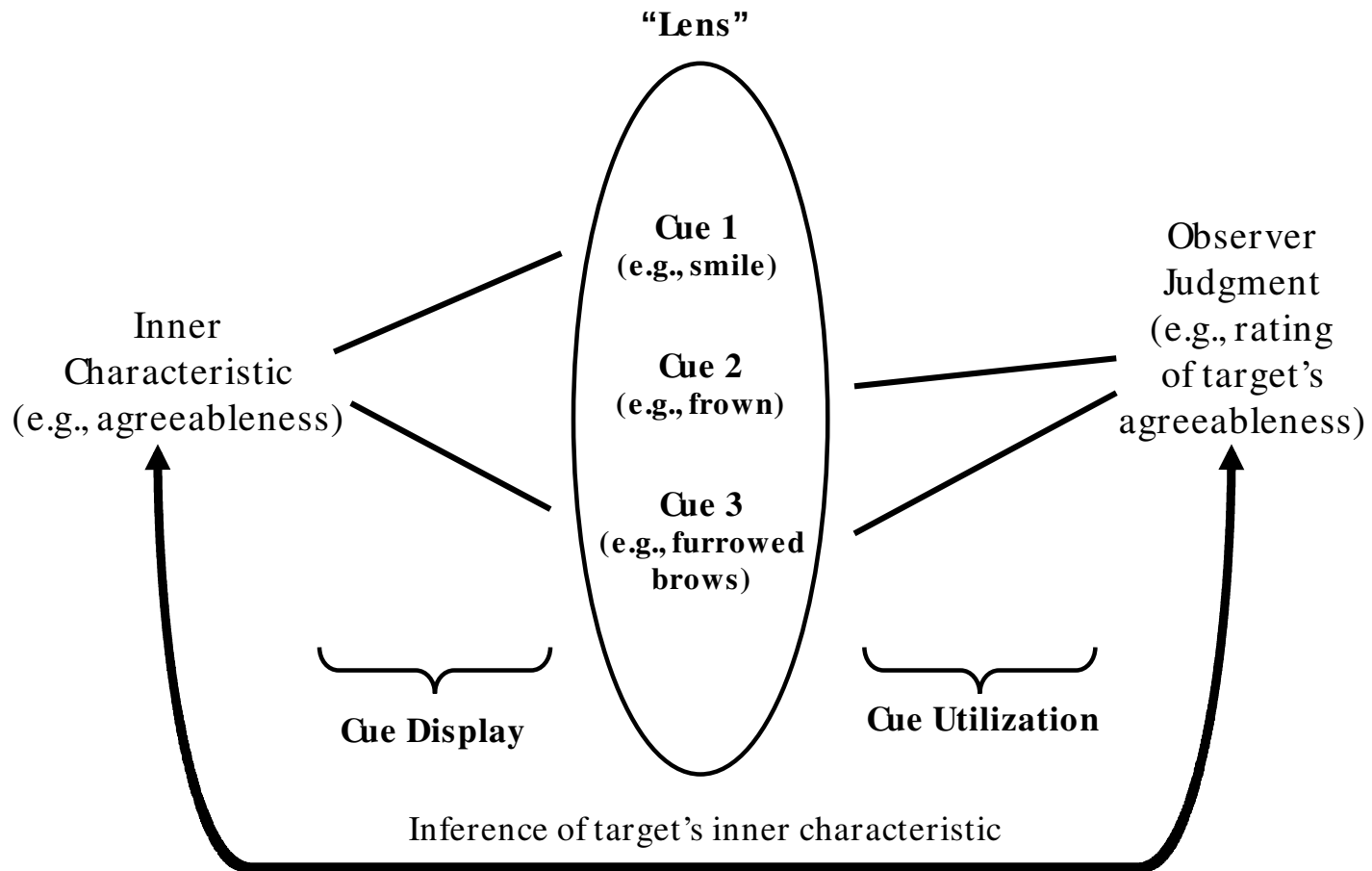
**"Lens"**

Cue 1
(e.g., smile)

Cue 2
(e.g., frown)

Cue 3
(e.g., furrowed brows)

Inner Characteristic
(e.g., agreeableness)

Observer Judgment
(e.g., rating of target's agreeableness)

**Cue Display**

**Cue Utilization**

Inference of target's inner characteristic

*Figure 3.* Brunswik's (1956) lens model.