

# The Experience of Power: Examining the Effects of Power on Approach and Inhibition Tendencies

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Two studies of task-focused dyads tested the approach/inhibition theory of power (D. Keltner, D. H. Gruenfeld, & C. Anderson, in press), which posits that having power increases the tendency to approach and decreases the tendency to inhibit. Results provided preliminary support for the theory: Participants higher in personality dominance or assigned control over resources expressed their true attitudes, experienced more positive and less negative emotion, were more likely to perceive rewards (i.e., that their partner liked them), and were less likely to perceive threats (e.g., that their partner felt anger toward them). Most of these effects were mediated by the sense of power, suggesting that subjective feelings of power are an important component in the effects of power.

Imagine a meeting between a faculty advisor and his 1st-year graduate student. The advisor has a great deal of power because he has the ability to provide or withhold resources or administer punishments—resources such as training, opportunities, and advice; or punishments such as harsh criticism, poor performance evaluations, or ejection from his laboratory. The 1st-year student, in contrast, has control over fewer resources and is less able to administer punishments to her advisor. When these two people meet, how will the advisor's power influence his behavior? How will it affect what he says, shape the emotions he feels, or direct the focus of his attention? Conversely, how will the student's low power dictate her behavior, her emotions, or her attention?

This question, how power influences social behavior, has received increasing empirical attention in recent years (cf. Bruins, 1999; Overbeck & Park, 2001). Research has shown that power affects behavior that ranges from the mundane, such as styles of dress and eating behavior (Ward & Keltner, 2001), to behavior with profound significance, such as governmental decisions (Gruenfeld, 1995), intergroup stereotyping (Fiske, 1993), and hate crime behavior (Green, Strohlovitch, & Wong, 1998).

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Jennifer L. Berdahl thanks the Committee on Research and the Institute of Industrial Relations at the University of California, Berkeley, for funding this research. We are grateful to Barry Staw and Lisa Epstein for their input into the development of the studies; Veeral Desai, Diana Jimeno, Aida Molina-Gant, Katie Kelly, Gene Liu, Rachele Robles, and Carrie Thomas for their research assistance; and Serena Chen, Oliver John, Jennifer Overbeck, Dacher Keltner, and Paul Van Lange for their thoughtful comments on drafts of the article.

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With the goal of providing a theoretical framework of the myriad effects of power, Keltner, Gruenfeld, and Anderson (in press) recently proposed the approach/inhibition theory of power. As we discuss, this theory proposes that power tips the balance between the behavioral approach and inhibition systems (Carver & White, 1994; Gray, 1982, 1987, 1991; Higgins, 1997, 1998), which in turn direct behavioral, emotional, and cognitive processes.

The current research has two broad aims: first, to test a number of hypotheses derived from the approach/inhibition theory of power that have not yet received adequate empirical examination, and, second, to examine the role of the subjective sense of power as a mediator of the effects of power. We pursue these aims in two studies of task-focused dyads. In each study, we measured participants' personality dominance, a personality trait associated with social power (Gough, 1987), and randomly assigned positions of power.

## Defining Power

We define power as the ability to provide or withhold valued resources or administer punishments (Emerson, 1962; Fiske, 1993; Kipnis, 1972; Thibaut & Kelley, 1959). This definition of power differentiates it from other, often related concepts. One important property of power is that it is contextual, defined with reference to a particular relationship or group (Emerson, 1962; Thibaut & Kelley, 1959). The contextual nature of power differentiates it from dominance, or the tendency for individuals to behave in assertive, forceful, and self-assured ways across a variety of contexts (Buss & Craik, 1980; Gough, 1987; Mann, 1959; Megargee, 1969; Stogdill, 1948). Although distinct, dominance is often a predictor of power, as individuals who behave dominantly often attain higher power in specific contexts (Gough, 1987; Mann, 1959; Megargee, 1969; Stogdill, 1948).

Power has also been differentiated from leadership, status, and authority, which are social roles that can endow individuals with power. Leadership is defined as "persuading other people to set aside for a period of time their individual concerns and to pursue a common goal that is important for the responsibilities and welfare of a group" (Hogan, Curphy, & Hogan, 1994, p. 493).

Thus, leaders are generally afforded power, as group members give them control over group resources and punishments to help them lead more effectively (Gibb, 1985). Status, or the amount of respect and prominence individuals hold in a social group, can also lead to control over resources and punishments, albeit those of a more social nature (Anderson, John, Keltner, & Kring, 2001; Savin-Williams, 1979). Higher status individuals can allocate their highly valued positive attention and praise and can persuade group members to ostracize particular individuals (Savin-Williams, 1979). Authority is an institutionalized role or arrangement that affords power (Weber, 1947).

Social influence can be seen as a primary consequence of power (Cartwright, 1965; French & Raven, 1959; Kipnis, 1972, 1976; Lewin, 1951); it is defined as the ability to change others' behavior, thoughts, and feelings (Asch, 1955; Cialdini & Trost, 1998; French & Raven, 1959). Thus, when people have power (i.e., control over resources and punishments), they often have an increased capacity to influence others.

### Psychological Approaches to Studying Power

The psychological literature on power can be organized around three main issues: the motive to attain power, the bases of power, and the consequences of having power. Research on the motive to attain power seeks to characterize individuals high in the need for power and identify the origins and consequences of the power motive (A. Adler, 1930; McClelland, 1975; Winter, John, Stewart, Klohnen, & Duncan, 1998; Winter & Stewart, 1978). Research on the bases of power examines the specific resources used by individuals to change the beliefs, attitudes, or behaviors of others (Bruins, 1999; Bugental, Blue, & Cruzcosa, 1989; Buss, Gomes, Higgins, & Lauterbach, 1987; French & Raven, 1959; Kipnis, Schmidt, & Wilkinson, 1980; Yukl & Falbe, 1990). This area of research seeks to provide a taxonomy of the different power bases (French & Raven, 1959; Kipnis et al., 1980; Yukl & Falbe, 1990), identify conditions under which people use different bases of power (Bruins, 1999; Bugental et al., 1989; Kipnis et al., 1980; Raven, 1999), and examine how targets of influence respond to different bases of power (e.g., Bugental & Lewis, 1999; French & Raven, 1959).

A third area of research examines how power influences those who possess it, which is the focus of the current studies. This research was championed by Kipnis (1972, 1976), who examined the assertion that power corrupts. His studies showed that having power causes individuals to attempt to influence others more, to value other people less, to increase psychological distance from other people, and to enhance self-perceptions (e.g., Kipnis, 1972, 1976; O'Neal, Kipnis, & Craig, 1994; Rind & Kipnis, 1999). For many years, Kipnis's work stood alone in examining the effects of power on those who possess it.

Recently, however, interest in the effects of power has resurged, and studies in diverse areas of social psychology have shown that power affects a wide range of social behaviors. People with high power have been shown to pay less attention to others and to use stereotypes more (Fiske, 1993; Goodwin, Operario, & Fiske, 1998; Keltner & Robinson, 1996, 1997), to use less systematic social cognition (Gruenfeld, 1995), to express their emotions more (Hecht & LaFrance, 1998), to show higher consistency between their internal traits and overt behaviors (Chen, Lee-Chai, & Bargh,

2001; Keltner, Young, Heerey, Oemig, & Monarch, 1998), and to behave in more socially inappropriate ways (Ward & Keltner, 2001). This work has been complemented by research on power-related topics such as socioeconomic status (N. E. Adler, Epel, Castellazzo, & Ickovics, 2000), gender (Hall & Halberstadt, 1997; Snodgrass, 1985, 1992), and race (Steele & Aronson, 1995).

Although this body of research has reminded us of the importance of power as a social-psychological construct, it has also remained a somewhat disparate collection of findings. There have been few attempts to link the effects of power on one type of behavior, such as nonverbal communication, with the effects of power on other types of social behavior, such as emotion or social perception. Why does power cause people to speak more (Dovidio, Brown, Heltman, Ellyson, & Keating, 1988), to initiate physical contact more (Henley, 1973), and to use less complex cognitive processing (Gruenfeld, 1995)? Although the corrupting influence of power can account for many findings, it cannot account for many others (e.g., the finding that powerful people express themselves more openly). Further, a corruption explanation does not easily address how lacking power also influences social behavior.

### Power, Approach, and Inhibition

With the aim of providing a theoretical framework of the effects of power, Keltner et al. (in press) recently proposed the approach/inhibition theory of power. This theory proposed that power tips the balance of activation between the behavioral approach and inhibition systems—the behavioral systems associated with rewards and threats, respectively (Carver & White, 1994; DePue, 1995; Fowles, 1980; Gray, 1982, 1987, 1991; Higgins, 1997, 1998; Newman, 1997; Sutton & Davidson, 1997).<sup>1</sup> The value in using these behavioral systems to understand the effects of power lies in their explanatory breadth, as they are associated with a host of behavioral, affective, and cognitive processes. Thus, an approach/inhibition framework helps integrate diverse findings from previous research as well as generates new hypotheses that can be tested in further research.

The behavioral approach system is posited to regulate behavior associated with rewards, such as food, achievement, sex, safety, and social attachment. The presence of attainable rewards and opportunities activates approach-related processes that help the individual pursue and obtain goals related to these rewards. For example, positive affect motivates approach-related behavior, scanning for rewards in the environment, and forward locomotion (Carver & White, 1994; Depue, 1995; Gray, 1994; Higgins, 1997, 1998). The behavioral inhibition system has been equated to an alarm system. Once activated by threats or potential punishments, this system triggers affective states such as anxiety, heightened vigilance for threats in the environment, avoidance, and response inhibition (Gray, 1982, 1987, 1991; Higgins, 1997, 1998).

<sup>1</sup> Theorists vary on the number of behavioral systems they propose and the names they use. The approach system has been called the activation (Carver & White, 1994) or promotion system (Higgins, 1997, 1998); the inhibition system has been called the prevention system (Higgins, 1997, 1998) and has been viewed by some as subsuming an avoidance system. Keltner et al. (in press) focused on the approach and inhibition systems because these systems were most closely linked to the rewards and threats related to high and low power.

Having high power is posited to activate the approach system for two reasons. First, elevated power is associated with increased access to rewards. When people have power, they have access to more material resources, such as financial resources and physical comforts, as well as social resources, such as higher esteem, praise, and positive attention (Buss, 1996; Chance, 1967; Derber, 1979; Eibl-Eibesfeldt, 1989; Ellis, 1993; French & Raven, 1959; Keltner et al., 1998; Mazur, 1973; Operario & Fiske, 2001; Savin-Williams, 1979; Weisfeld, 1993). Second, when people have power, they are aware that they will encounter less interference from others when approaching potential rewards (Keltner et al., 1998; Weber, 1947; Winter & Stewart, 1978).

For complementary reasons, having low power is proposed to activate the inhibition system. When people have low power, they are subject to more social and material threats (e.g., Chance, 1967; Fiske, 1993; Hall & Halberstadt, 1997; Steele & Aronson, 1995; Whitney & Smith, 1993); for example, people with low power are under the constant threat of losing favor among powerful others (Chance, 1967; Hall, 1984).<sup>2</sup> Moreover, people with low power are aware of these threats and aware of the constraints placed on them (Keltner et al., in press).

Many findings from previous research corroborate the approach/inhibition framework. People in positions associated with high power (e.g., leaders, members of majority groups, people high in socioeconomic status) often exhibit signs of an active approach system, and people in positions of low power (e.g., followers, members of minority groups, people low in socioeconomic status) often exhibit signs of an active inhibition system (Keltner et al., in press). Thus, the approach/inhibition theory of power has shown initial promise as a broad theoretical framework that integrates diverse findings on the effects of power.

However, as Keltner et al. (in press) pointed out, much research needs to further examine the theory. Many hypotheses are in need of direct empirical testing—for example, the idea that power influences the expression of attitudes in social interactions or that power influences the perception of social rewards and threats. Further, research needs to examine the role of mediators in the approach/inhibition framework—for example, the idea that powerful people are more approach oriented in part because they feel more powerful. Finally, it is important that research use methodologies that allow clearer causal inference. Many findings used to support the approach/inhibition theory stem from studies of emergent leadership, sociometric status, or socioeconomic status; in these studies, it is possible that individuals who are more approach oriented and less inhibition oriented are more likely to assume positions of leadership and high status (Anderson et al., 2001).

For our specific hypotheses in Study 1, we expected participants higher in power to experience relatively more positive emotion. We expected participants lower in power, in contrast, to show greater inhibition in expressing their attitudes and opinions, feel more negative emotion, and show a stronger tendency to perceive threats. Finally, we expected the sense of power to mediate at least some of the effects of power. We address each of these hypotheses in the following sections.

### Inhibition of Expressing Attitudes

Research on social participation and group dynamics has shown that people with high power tend to speak more than people with

low power (e.g., Aries, Gold, & Weigel, 1983; Bales, Strodtbeck, Mills, & Roseborough, 1951; Cashdan, 1998; Dovidio et al., 1988; Leffler, Gillespie, & Conaty, 1982; Stein & Heller, 1979). For example, Dovidio et al. (1988) found that people randomly assigned to high power positions in a discussion task spoke more than twice as much as people randomly assigned to low power positions. Many theorists have argued that this occurs because powerful people are given more chances to speak than are individuals with low power, and there is empirical support for this idea (Bales et al., 1951; Berger, Rosenholtz, & Zelditch, 1980).

It is also possible, however, that people with low power inhibit themselves from speaking. That is, people with low power might perform a kind of self-censorship. According to the approach/inhibition theory of power, when people have low power they have a more activated inhibition system, which increases their sensitivity to potential threats. One particularly salient threat to people with low power is the potential for conflict with others; conflict can undermine their relationships with those higher in power (Hall, 1984; Operario & Fiske, 2001), which may result in decreased rewards and increased punishments. To avoid the threat of interpersonal conflict, people with low power might be more inhibited in what they express—they might keep themselves from expressing their attitudes if such expression might provoke conflict.

Previous research has provided indirect support for this idea: People with low power exhibit more inhibitive nonverbal behaviors, such as postural constriction and decreased gestural activity (Ellyson & Dovidio, 1985; Henley, 1973), and more facial muscle actions that inhibit emotional displays, such as lip presses and lip sucks (Keltner et al., 1998). Classic research on obedience to authority (Milgram, 1963) and social conformity (Asch, 1955) also showed that people in a presumably low power position keep their opinions to themselves. In the current research, we extend these findings by directly asking participants how much they kept their disagreements to themselves and how much they feigned agreement when they disagreed.

### Emotional Experience

In the field of emotion, many theorists have argued that power shapes emotional experience (Clark, 1990; Collins, 1990; Kemper, 1991; Tiedens, Ellsworth, & Mesquita, 2000), yet little empirical research has examined this assertion. Research has shown that individuals with different levels of power exhibit differences in smiling behavior and in displays of anger (e.g., Cashdan, 1998; Deutsch, 1990; Dovidio et al., 1988; Ekman, 1971; Hall & Friedman, 1999; Hecht & LaFrance, 1998) and that high or low power is ascribed to individuals who experience and display particular emotions, such as anger, guilt, or sadness (Keating et al., 1981; Knutson, 1996; Tiedens et al., 2000). Yet these findings do not demonstrate that people with high and low power actually feel different emotions. Emotional experience and display are not iso-

<sup>2</sup> There are likely moderators to these hypotheses or cases in which people with high power might be more sensitive to threats than people with low power. In particular, when power relations are unstable, people with high power might be more sensitive to threats because they have more to lose than do people with low power. Further, if powerful people are held publicly accountable for their actions, the effects of power could be attenuated or even reversed.

morphic (Ekman, 1971; Fridlund, 1994; Hecht & LaFrance, 1998). For example, when people have low power, they might show less anger, but they might feel more of it (Hecht & LaFrance, 1998).

How might power affect emotional experience? The behavioral approach system has been linked to positive emotion. Markers of the approach system, including left frontal activity and dopamine, are correlated with increased positive affect (Ashby, Isen, & Turken, 1999; Carver & White, 1994; Davidson, 1992; DePue, 1995; Sutton & Davidson, 1997), and people who feel positive affect show a more approach-oriented behavioral style (DePue, 1995). In contrast, the behavioral inhibition system is associated with negative affect (e.g., Davidson, 1992), in that self-report measures of behavioral inhibition and negative mood are highly correlated (Carver & White, 1994), as are central nervous system markers of inhibition and avoidance (e.g., increased activity in the right frontal cortex) and self-reports of baseline negative mood (DePue, 1995; Sutton & Davidson, 1997).

If high power is associated with a more active approach system, then people with higher power should experience more positive emotion; conversely, if low power is associated with a more active inhibition system, then people with lower power should experience more negative emotion. In other words, one should expect an interaction between power and the valence of the emotion experienced: The effect of power on emotional experience should depend on the valence of the emotion, in that it should positively affect positive emotion and negatively affect negative emotion. It is important to point out that positive and negative emotion are two independent dimensions, not opposite poles of a single dimension (Watson, Clark, & Tellegen, 1988).

There is some indirect support for the link between high power and positive emotion. Kipnis's (1972, 1976) work showed that having high power elevates self-esteem, which is associated with positive emotion. There is also indirect evidence for a link between low power and negative emotion, in that children of low socioeconomic status report higher levels of negative moods, guilt, and depression (e.g., Hecht, Inderbitzen, & Bukowski, 1998; Kupersmidt & Patterson, 1991; Upmanyu, 1974). We extend these findings by more directly assessing the link between power and emotional experience.

### Social Perceptions

The relation between power and social perceptions has received much theoretical and empirical attention in recent years (e.g., Fiske, 1993; Hall & Halberstadt, 1997; Keltner & Robinson, 1997; Overbeck & Park, 2001; Snodgrass, 1985, 1992). This work has generally focused on the hypothesis that people with low power are more accurate social judges than are people with high power, which has been called the *subordination hypothesis* (Hall & Halberstadt, 1997). This hypothesis stems from the idea that people with low power attend to people with high power more than vice versa and thus detect more of the information they need to make accurate social judgments. Although some studies have supported the subordination hypothesis (e.g., Erber & Fiske, 1984; Fiske, 1993; Goodwin et al., 1998; Keltner & Robinson, 1997; Neuberg & Fiske, 1987), other studies have found mixed or even contradictory results (Hall & Halberstadt, 1997; Overbeck & Park, 2001; Snodgrass, 1985, 1992). These inconsistencies have led some theorists to argue that the relation between power and social

perception is more complicated than the subordination hypothesis asserts, and these theorists have called for a reconceptualization of this issue (Hall & Halberstadt, 1997; Overbeck & Park, 2001).

The approach/inhibition theory of power posits that when individuals have high power, they are more attentive to rewarding aspects of the social environment, whereas when they have low power, they are more attentive to threatening aspects of the social environment (Keltner et al., in press). Thus, this suggests people with high and low power differ in their perceptual tendencies rather than in overall perceptual accuracy. If people with high power are more attentive to rewards, they should perceive the same environment as more rewarding than should people with low power. If people with low power are more attentive to threats, they should perceive the same environment as more threatening than should people with high power.

Some indirect evidence from related literatures lends support for these hypotheses. Children of low sociometric status, who have lower power in their peer groups (Anderson et al., 2001), have been shown to perceive more threat in ambiguous social situations (Schwartz, Dodge, & Coie, 1993). Also, adults lower in socioeconomic status have been shown to report higher levels of mistrust in others (Mirowsky & Ross, 1983; Dohrenwend & Dohrenwend, 1969) and higher levels of worry about crime (Riger, LeBailly, & Gordon, 1981).

We measured participants' tendencies in perceiving social threats by focusing on their estimates of how much their partner felt threatening emotions toward them (anger, contempt, and disgust). We expected low power participants to make higher estimates of how much their partner felt threatening emotions, relative to how much their partner actually felt these emotions, in comparison with high power participants. This perceptual tendency hypothesis could be supported by one of two outcomes: Participants with low power could be more accurate perceivers of their partner's threatening emotions (because they pay more attention to expressions of those emotions), compared with high power perceivers, who underestimate their partner's threatening emotions. Alternatively, participants with low power could overestimate their partner's threatening emotions (because they mistakenly interpret ambiguous cues as expressions of those emotions), compared with individuals with high power, who either accurately perceive threatening emotions or underestimate threatening emotions. In either of these scenarios, the findings would indicate that low power perceivers have a stronger tendency to perceive threats.

### The Sense of Power

According to the approach/inhibition theory of power, power leads to a heightened approach and depressed inhibition system in part because having high power is associated with a higher level of rewards and lower level of threats in the environment. However, having power also means that one can act with less interference from others, whereas having low power means that one is more subject to punishments and threats. Thus, people with high power may be more approach oriented in part because they feel more powerful than those with low power; conversely, people with low power may be more inhibition oriented in part because they feel less powerful than those with high power. This suggests that the effects of power might be mediated by the subjective sense of power.

This idea is consistent with findings from related research. Individuals' perceptions of their socioeconomic status mediate the effect of their actual socioeconomic status on a number of mental and physical health outcomes (N. E. Adler et al., 2000). Further, some parents have a low sense of power in their relationship with their child, even though they are in a nominally higher power position (Bugental et al., 1989; Bugental & Lewis, 1999; Bugental, Lyon, Krantz, & Cortez, 1997). These "powerless" parents tend to behave, feel, and think similarly to individuals who actually have low power (Bugental & Lewis, 1999). In the current research, we measured the sense of power and examined whether it mediated the effects of power on social behavior.

### Overview of Study 1

In Study 1, we examined the effects of power in real interactions between individuals, as opposed to using confederates or controlled social stimuli such as vignettes. Randomly paired participants worked together on a decision-making task in which they allocated bonuses to six hypothetical employees of an organization.

We focused on two bases of power: personality dominance, a personality trait associated with power, and randomly assigned control over resources. People high in personality dominance have been shown to attain more power in dyadic interactions with strangers (Gough, 1987; Megargee, 1969) and in larger social groups (Mann, 1959; Stogdill, 1948). For our assignment of power, we randomly selected 1 dyad member to control the allocation of \$10 between himself or herself and the partner. This method of assigning power was designed to create actual power differences between dyad members. Many studies have used role-playing techniques to manipulate power, which introduce doubt as to whether observed effects are due to actual power differences between participants or due to what participants believe their high (or low) power role required them to play. Thus, to supplement the role-playing method, we gave high power participants ostensive control over a real and valued outcome.

We expected participants lower in personality dominance and those assigned no control over resources to be more inhibited in expressing their attitudes and to have a stronger tendency to perceive their partner's threatening emotions. We expected participants higher in personality dominance and those assigned control over \$10 to experience more positive, relative to negative, emotion.

### Study 1

#### Method

**Participants.** 174 students (83 men, 91 women) from introductory psychology courses at a large West Coast university participated for course credit. They were 20 years old on average ( $SD = 1.8$ ); 30.5% of participants were Caucasian, 44.8% were Asian American, 8.0% were Hispanic, 3.4% were African American, and 9.8% were of other ethnicities.

**Procedure.** Typically, 4 to 8 participants were scheduled for each experimental session. Participants were first seated around a large conference table, where they signed a consent form and completed a questionnaire that measured demographic information and personality traits. Participants were told that the study examined "how compensation decisions are made within organizations" and were told that they would earn up to \$10 for their participation.

Participants individually completed a decision-making task in which they pretended to be a member of an organization's bonus allocation committee; their task was to divide \$7,390 among six worthy employees. This task is a standardized exercise commonly used to assess managerial performance (e.g., Howard & Bray, 1988; Thornton & Byham, 1982). Participants were given 20 min to read information about each of the six candidates (e.g., their salary, date of their last bonus, and length of tenure with the organization) and make their allocation decisions.

While participants made these decisions, in a separate room the experimenter randomly paired participants into dyads.<sup>3</sup> A total of 87 dyads were formed, 20 all male, 24 all female, and 43 mixed sex. After participants completed the task, the experimenter collected the materials and announced how participants were paired. Each pair of participants was led to a smaller conference room with a video camera in the corner. Dyads were instructed to reach a consensus in their committee meeting regarding how much each employee should receive. To assign power within dyads, we told participants the following:

We have \$10 to distribute between the two of you. We have found it is easiest if one of you makes the decision about how to divide the money. With a flip of a coin, we have randomly assigned \_\_\_\_ [the high power participant's name] this responsibility. \_\_\_\_ [high power participant's name], you will make this decision in private after you are done with the Compensation Committee task. You are not to discuss the decision together.

Participants were told they would return in a week to collect their payment, at which time they would not see their partner. After 15 min, the experimenter collected the dyad's decisions and led each participant to a separate room, where they completed a questionnaire alone.

**Personality dominance.** We used Wiggins, Trapnell, and Phillips's (1988) Revised Interpersonal Adjective Scales (IAS-R) to measure personality dominance. The IAS-R is designed to measure a two-dimensional circumplex model of personality, in which the two major axes are status (or dominance) and love (or communion). Participants rated the eight adjectives of the Dominance and Submissiveness scales (e.g., *assertive, firm, timid, forceless*) from 1 (*does not describe me at all*) to 7 (*describes me very well*). To avoid participants' awareness that the study examined power, we embedded these adjectives within a larger set of distractor personality adjectives. We combined the Dominance and Submissiveness scales by reverse scoring the Submissiveness items and averaging all 16 items ( $\alpha = .91$ ;  $M = 4.8$ ,  $SD = 0.9$ ).

**Influence in the task.** A primary consequence of power is the ability to influence others' behavior, thoughts, and feelings (Cartwright, 1965; French & Raven, 1959; Kipnis, 1972, 1976; Lewin, 1951). To examine whether personality dominance and our manipulation of power related to influence in our dyads, we measured the degree to which committee decisions diverged from each participant's original decisions (Gray-Little & Burks, 1983). The more participants changed from their original decisions to the decisions they made in their committee, the less influence they were construed as having on the committee. We calculated the absolute difference between their original decisions and their dyad decisions for each of the six candidates, and then summed these absolute differences. The mean of this score was 708.4 ( $SD = 540.0$ ).

**Inhibition of attitude expression.** Participants reported in an open-ended response format the number of times they "disagreed with their partner but did not express it" and "expressed agreement to their partner even though they disagreed". These two variables correlated with one

<sup>3</sup> Participants were paired with strangers. When this was not possible, participants were paired with the person they were least familiar with in the group. Only 8 of the possible 65 dyads were familiar with one another, and 6 of these dyads reported being acquaintances or less; the remaining 2 dyads reported being friends.

another ( $r = .62, p < .01$ ) and were combined to form one measure of inhibition in attitude expression ( $M = 0.8, SD = 1.1$ ).

**Emotional experience.** Participants rated their experience of 15 emotions—amusement, anger at self, anger at partner, contempt, discomfort, disgust, embarrassment, fear, frustration, guilt, happiness, pride, sadness, self-consciousness, and shame—from 0 (*none*) to 8 (*extreme*). Ratings of the 3 positive emotions were correlated and were thus averaged to form one overall measure of positive emotional experience ( $\alpha = .70; M = 2.9, SD = 0.2$ ). An alpha reliability analysis of the negative emotions showed that 7 emotions had item–total correlations higher than .60: anger at self, anger at partner, discomfort, embarrassment, fear, sadness, and shame. These negative emotions were averaged to form one negative emotional experience score ( $\alpha = .88; M = 0.6, SD = 0.9$ ). To assess whether the effect of power on emotion depended on the valence of the emotion, we created a difference score between positive and negative emotional experience by subtracting negative emotion from positive emotion ( $M = 3.3, SD = 2.0$ ). A significant relation between personality dominance and this difference score would be equivalent to a significant interaction (Griffin, Murray, & Gonzalez, 1999).

**Perceptions of partner's threatening emotions.** Participants estimated the amount that their partner experienced anger, contempt, and disgust directed at them from 0 (*none*) to 8 (*extreme*). These variables correlated with one another and were aggregated into one measure of estimation of partner's threatening emotions ( $\alpha = .81; M = 0.3, SD = 0.8$ ). Participants' partners also rated how much they experienced these emotions toward participants, using the same scale. These emotions were also correlated and thus aggregated into one measure of felt threatening emotions ( $\alpha = .75; M = 0.3, SD = 0.8$ ). We then subtracted participants' estimates of their partner's threatening emotions from their partner's reported experience of threatening emotions ( $M = 0.0, SD = 1.7$ ). Thus, positive scores indicate overestimations, scores close to zero indicate accuracy, and negative scores indicate underestimation.

**Sense of power.** Participants rated how powerful they were in the dyad with two items: "Who had more control over the way in which you solved the task?" and "Who was more dominant during your interaction?" They rated each item from 1 (*my partner*) to 7 (*me*). Answers to these items were correlated ( $r = .78$ ) and were thus averaged to form one overall sense of power score ( $M = 4.3, SD = 1.2$ ).

**Analyses.** Data collected in dyads can violate assumptions of independence. According to Kenny and la Voie (1985), if such nonindependence exists, it is best to analyze data at the dyad level. If the data within dyads are not dependent, however, individual data should be used, and effects should be interpreted at the individual level. We determined the proper level of analysis for each dependent variable using the analysis of variance (ANOVA) method outlined by Kenny and la Voie (1985). These analyses showed that not a single outcome variable was dependent within dyads (with the exception of influence in the task, which is, by definition, dependent within dyads). For inhibition in expressing attitudes,  $F(86, 87) = 1.07$ ; for the relative level of positive to negative emotion experienced,  $F(86, 87) = 1.11$ ; for positive emotion experienced,  $F(86, 87) = 1.34$ ; for negative emotion experienced,  $F(86, 87) = 1.04$ . Therefore, we assessed the effects of assigned power and the relation between personality dominance and the outcome variables on the individual level.

For influence in the task, we conducted analyses of covariance (ANCOVAs) with personality dominance, the power manipulation, and their interaction as independent variables and sex and ethnicity as covariates. Dyad members were designated as high or low in personality dominance if they were relatively higher or lower than their partner, respectively. No dyads had members equal in levels of personality dominance. For all other dependent variables, we ran linear regressions with personality dominance, the power manipulation, their interaction, sex, and ethnicity as independent variables.

We controlled for sex and ethnicity in all analyses because previous studies have shown power differences to emerge in dyads and small groups

as a function of these variables (e.g., Berger et al., 1980; Gray-Little & Burks, 1983; Megargee, 1969). We did not find any significant effects for sex or ethnicity on influence in the task, on any of the other dependent variables, or on the sense of power. Further, sex and ethnicity did not have any interaction effects with the power manipulation or personality dominance. Thus, the power manipulation and personality dominance related to the outcome variables similarly for men and women and for people of different ethnicities.

## Results

The manipulation of power had no significant main effects or interaction effects on any outcome variable, including influence in the task. This suggests that our manipulation of power was too weak to have meaningful effects. Anecdotal feedback suggests that participants did not view \$10 as a meaningful amount of money and that participants volunteered for course credit and not money. In addition, control over dividing the \$10 was known to be randomly assigned and was therefore not accompanied by the belief that the participant dividing the money was more qualified to do so. Thus, we focus our presentation of results on the effects of personality dominance.

**Influence in the task.** As expected, individuals higher in personality dominance moved less in their decisions (i.e., had more influence in the task;  $M = 594.6, SD = 466.9$ ) than did individuals lower in personality dominance ( $M = 801.7, SD = 616.7$ ),  $F(1, 87) = 5.00, p < .05$ . Thus, this suggests that personality dominance related to having more power in the dyad, as influence is often a consequence of power (e.g., French & Raven, 1959).

**Inhibition of expressing attitudes.** As expected, participants lower in personality dominance reported inhibiting themselves from expressing their attitudes more than did participants higher in personality dominance ( $\beta = -.21$ ),  $t(147) = -2.56, p < .05$ .

**Emotional experience.** As expected, the relation between personality dominance and emotional experience depended on the valence of the emotion ( $\beta = .16$ ),  $t(144) = 1.94, p = .055$ . Was this interaction driven by the relation between personality dominance and positive emotion, the relation between personality dominance and negative emotion, or both? The separate regression lines for positive and negative emotional experience are shown in Figure 1. As shown, this interaction was driven entirely by negative emotion. Personality dominance did not relate to positive emotion ( $\beta = -.03$ ),  $t(144) = -0.35$ , but it strongly related to negative emotion ( $\beta = -.38$ ),  $t(144) = -4.89, p < .01$ .

**Perceptions of partner's threatening emotions.** Personality dominance was significantly related to participants' perceptions of their partner's threatening emotions ( $\beta = -.18$ ),  $t(144) = -2.11, p < .05$ . Thus, less dominant participants perceived more threatening emotions in their partner than did more dominant participants. However, in relation to how much threatening emotion their partner actually felt, did participants lower in personality dominance overestimate their partner's threatening emotions? Personality dominance did not predict over- or underestimations of partner's threatening emotions ( $\beta = -.11$ ).

**The sense of power as a mediator.** To examine whether the sense of power mediated any effects, one must satisfy four conditions: (a) The independent variable needs to be significantly related to the outcome variable, (b) the independent variable needs to be significantly related to the sense of power, (c) the sense of power needs to be significantly related to the outcome variable

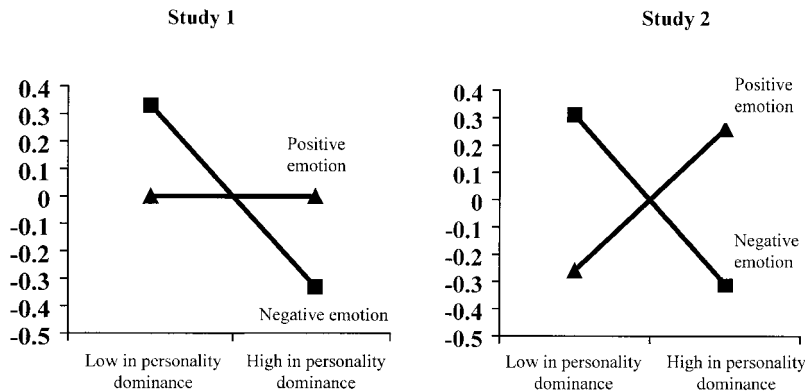


Figure 1. Emotional experience. For display purposes, z scores are shown.

while the independent variable is controlled for, and (d) the relation between independent variable and the outcome variable needs to be significantly reduced when the indirect effect of the sense of power is taken into account (Kenny, Kashy, & Bolger, 1998). In the last step, one can test the significance of the indirect effect—that is, the relation between the independent variable and the sense of power, and the relation between the sense of power and the dependent variable when the independent variable is controlled for (Kenny et al., 1998). This indirect effect is translated into a z score, which can be tested for significance.

As personality dominance was significantly related to the inhibition of attitude expression, the relative experience of positive to negative emotion, and the experience of negative emotion, the first condition was satisfied for those outcome variables. The relation between personality dominance and the sense of power was also significant ( $\beta = .52$ ),  $t(144) = 7.11$ ,  $p < .01$ , which satisfied the second condition. The third condition was also satisfied for all three outcome variables: After we controlled for personality dominance, the sense of power related to the inhibition of attitude expression ( $\beta = -.24$ ),  $t(144) = -2.59$ ,  $p < .05$ , the experience of positive relative to negative emotional experience ( $\beta = .17$ ),  $t(144) = 1.81$ ,  $p < .05$ , one-tailed, and negative emotional experience ( $\beta = -.21$ ),  $t(173) = -2.37$ ,  $p < .05$ . Finally, the fourth condition was satisfied for all three outcome variables: The indirect effect of the sense of power was significant for the inhibition of attitude expression ( $Z = -2.36$ ,  $p < .01$ ), for the experience of positive relative to negative emotion ( $Z = 1.87$ ,  $p < .05$ , one-tailed), and for negative emotional experience ( $Z = -2.31$ ,  $p < .01$ ). Thus, these analyses suggest that the sense of power mediated the relations between personality dominance and the inhibition of attitudes and between personality dominance and negative emotional experience. The analyses also provide preliminary evidence that the sense of power mediated the relation between personality dominance and the relative experience of positive to negative emotion, as the third condition was satisfied only at the one-tailed level for that outcome variable.

### Discussion

The findings from Study 1 provide preliminary evidence in support of the approach/inhibition theory of power. Participants lower in personality dominance inhibited themselves from ex-

pressing their attitudes, kept their disagreements to themselves, and expressed agreement even when they disagreed. They also experienced more negative emotion than did participants higher in personality dominance.

However, participants lower in personality dominance did not show a stronger bias in perceiving their partner's threatening emotions, and participants higher in personality dominance did not experience more positive emotion. It is also interesting that there were no main effects for sex or ethnicity, given that previous research has shown that sex (Megargee, 1969) and ethnicity (Berger et al., 1980) sometimes influence the power individuals attain in dyads and small groups. The ethnic composition of the sample was primarily Caucasian and Asian American; thus, it is possible that the effects of diffuse status cues did not come into play because these two ethnicities are not stereotypically perceived as differing in competence. Similarly, the task was neither stereotypically male nor stereotypically female, and sex may not have played a role in signaling competence. It is also possible that times have changed and that sex may no longer override personality dominance in determining who attains power in mixed-sex dyads of college peers. As evidence consistent with this idea, recent studies found no sex differences in leadership emergence in mixed-sex task groups (e.g., Berdahl & Anderson, 2002).

The findings from Study 1 also show that all significant relations between personality dominance and the outcome variables were mediated by the sense of power. Thus, these findings suggest that the sense of power is an important component of the effects of power. That is, they are consistent with the idea that dominant individuals (who had more influence) behaved the way they did in part because they felt more powerful.

### Study 2

Study 2 was designed to extend the findings from Study 1 in a number of ways. In particular, the findings from Study 1 suggest that having lower power is linked to inhibition-related tendencies. Thus, in Study 2, we aimed to more closely examine whether having high power is linked to approach-related tendencies.

First, in Study 1, we found that participants lower in personality dominance inhibited themselves from expressing their attitudes more than did individuals higher in personality dominance, which supports the link between low power and inhibition. In Study 2, we

examined whether the converse is also true. That is, do individuals higher in power express their attitudes and opinions more than do individuals lower in power? To address this question, we measured how much participants expressed their true attitudes and opinions in addition to how much they inhibited the expression of their attitudes and opinions.

Second, in Study 1, we examined whether participants low in power had a stronger tendency to perceive social threats. In Study 2, we assessed whether participants high in power had a stronger tendency to perceive social rewards as well. Specifically, we focused on participants' estimates of how much their partner liked them and liked working with them. Achieving the liking of others is a very rewarding aspect of social interactions (e.g., Landy & Aronson, 1968); thus, we expected high power participants to make higher estimates of how much their partner liked them, relative to how much their partner actually liked them, in comparison with low power participants. Similar to the hypothesis regarding the perception of threats, this hypothesis could be supported by one of two outcomes: Participants with higher power could be more accurate perceivers of their partner's liking (because they pay more attention to expressions of liking), compared with low power perceivers who underestimate liking. Alternatively, participants with high power could overestimate their partner's liking of them (because they mistakenly interpret ambiguous cues as expressions of liking), compared with individuals with low power, who either accurately perceive liking or underestimate liking.

In Study 2, we also used a stronger manipulation of power by giving one dyad member ostensive control over more valued resources. Specifically, participants volunteered for Study 2 with the hope of earning extra credit in an introductory business course; we ostensibly gave one dyad member control over how many extra credit points he or she and the partner would each receive as well as how much of a \$500 prize each would receive if their dyad won an experimentwide lottery. Moreover, we were concerned that perceptions of illegitimacy of the power assignment in Study 1 could introduce a confound. For example, if we told participants that the assignment to the high power position was random, low power participants might feel cheated, which would itself heighten their feelings of negative emotion. Therefore, when we assigned participants to the high power position in Study 2, we implied that this person was more qualified for the position.

## Method

**Participants.** 130 students (66 men, and 64 women) from an introductory business class at a large West Coast university participated for the possibility of extra credit and winning a \$500 lottery. Participants were placed in same-sex dyads only. Thirty-two percent of the participants were Caucasian, 52% were Asian American, 5% were African American, and 3% were Hispanic, Chicano, or Latino. The mean age was 21.2 ( $SD = 1.4$ ).

**Procedure.** The procedure was identical to that in Study 1, except that we asked participants about their previous leadership experience on the background questionnaire, we used a different manipulation of power, and students allocated bonus money to four rather than six employees. When dyads were led to smaller conference rooms together, they were given the following instructions:

Before you begin working on the compensation committee task together, we want to remind you that you have the opportunity to make up to 5 extra credit points in this experiment, and \$500 if your committee wins the lottery.

To realistically simulate committee decision-making in organizations, we have chosen to make one of you the leader of the committee, and the other will be a subordinate on the committee. We have reviewed your background questionnaires to assign these roles. The person most qualified to assume the leadership position on this task will also evaluate the subordinate at the end of the session. This evaluation will be used to determine extra credit point allocations and how the money should be divided if your committee wins the lottery.

We have determined that \_\_\_\_ [the leader's name] should be the leader of this committee. You are ultimately responsible for your committee's decision and performance. You will also evaluate \_\_\_\_ [the subordinate's name] at the end of the session, in private on a questionnaire—that is, \_\_\_\_ [the subordinate] will never see your evaluation. Based on the accuracy of your evaluation, which we will determine from the videotape and with other information, we will decide how many extra credit points to assign you, between 0 and 5, and your partner, between 0 and 5, and how to distribute the \$500 between you if your committee wins the lottery.

As in Study 1, dyads were given 15 min to complete the task together. The experimenter then led the subordinate to a separate room, and both dyad members were given a questionnaire about the dyad decision-making session. All participants were debriefed and given the full five extra credit points. One randomly selected dyad was given the \$500 prize, which was distributed evenly between dyad members.

**Personality dominance.** As in Study 1, personality dominance was measured with the IAS-R Dominance and Submissiveness scales ( $\alpha = .87$ ;  $M = 4.8$ ,  $SD = 0.8$ ).

**Influence in the task.** To examine whether personality dominance and our power manipulation were related to social influence, a typical consequence of power, we measured influence in the task the same way as in Study 1. We calculated the absolute difference between participants' individual decisions and their dyad decisions for each candidate and then summed this absolute difference across all four candidates. The mean of this score was 607.9 ( $SD = 408.6$ ).

To check the perceived legitimacy of the power assignment, we asked participants, "Why do you think your partner [you] was [were] chosen to lead the discussion?" We then coded these answers for perceived legitimacy or illegitimacy. Fifteen percent of participants perceived the power assignment as illegitimate; thus, we analyzed the data in two ways, one using all participants, and the other excluding participants who perceived the power assignment as illegitimate. There were not significant differences in the findings when we excluded participants who perceived the assignment as illegitimate. Therefore, we kept all participants in the analyses.

**Expression of attitudes versus inhibition of attitude expression.** Participants reported how many times they "expressed their true feelings, attitudes, and opinions" on a scale from 1 (*never*) to 7 (*many times*;  $M = 6.4$ ,  $SD = 0.9$ ). Participants also reported how many times they "expressed agreement to their partner even though they disagreed," "kept their honest opinions to themselves," and "gave in on a certain point to avoid disagreements." These latter three items were correlated and thus aggregated into one inhibition of attitude expression score ( $\alpha = .70$ ;  $M = 6.0$ ,  $SD = 0.9$ ).

**Emotional experience.** Participants rated their experience of the same emotions as they did in Study 1, using the same scale from 0 (*none*) to 8 (*extreme*). We again measured positive emotion by averaging amusement, happiness, and pride ( $\alpha = .71$ ;  $M = 3.8$ ,  $SD = 1.8$ ). We again measured negative emotion by averaging anger at self, anger at partner, discomfort, embarrassment, fear, sadness, and shame ( $\alpha = .83$ ;  $M = 0.5$ ,  $SD = 0.8$ ). We then created a difference score between positive and negative emotional experience by subtracting negative emotion from positive emotion ( $M = 3.3$ ,  $SD = 2.0$ ).

**Perception of partner's liking.** Participants rated their agreement with two items, "My partner liked me as a person" and "My partner liked



working with me," from 1 (*disagree strongly*) to 7 (*agree strongly*). Answers to these items correlated highly and were thus averaged to form one measure of estimation of partner's liking ( $\alpha = .94$ ;  $M = 5.3$ ,  $SD = 1.0$ ). Participants' partners rated their agreement with two complementary items, "I liked my partner as a person" and "I liked working with my partner," on a scale from 1 (*disagree strongly*) to 7 (*agree strongly*). Answers to these items correlated highly and were thus averaged to form one measure of actual liking ( $\alpha = .90$ ;  $M = 5.7$ ,  $SD = 1.1$ ).

*Perception of partner's threatening emotions.* As in Study 1, participants estimated the amount that their partner experienced anger, contempt, and disgust directed at them from 0 (*none*) to 8 (*extreme*). These variables correlated with one another and were aggregated into one measure of estimation of partner's threatening emotions ( $\alpha = .68$ ;  $M = 0.5$ ,  $SD = 0.9$ ). Participants' partners also rated how much they experienced these emotions toward participants, using the same scale. These emotions were also correlated and thus aggregated into one measure of felt threatening emotions ( $\alpha = .71$ ;  $M = 0.5$ ,  $SD = 1.0$ ). We then subtracted participants' estimates of their partner's threatening emotions from their partner's reported experience of threatening emotions ( $M = 0.0$ ,  $SD = 1.4$ ). Thus, positive scores indicate overestimations, scores close to zero indicate accuracy, and negative scores indicate underestimation.

*Sense of power.* Participants rated three items, "I was in control in the compensation exercise," "I was dominant in the compensation exercise," and "I led our discussion" on a scale from 1 (*disagree strongly*) to 7 (*agree strongly*). These items correlated and were thus averaged to form one score ( $\alpha = .83$ ;  $M = 4.6$ ,  $SD = 1.2$ ).

*Analyses.* To determine the appropriate level of analysis for each dependent variable, we again used the ANOVA method outlined by Kenny and la Voie (1985). None of the outcome measures were dependent within dyads except for negative emotion,  $F(64, 65) = 1.75$ ,  $p < .05$ . Therefore, we used dyad-level analyses involving negative emotion and individual-level analyses for all other outcome variables.

For influence in the task and negative emotion, we conducted ANCOVAs with personality dominance, the power manipulation, and their interaction as independent variables and sex and ethnicity as covariates. Again, dyad members were designated as high or low in personality dominance if they were relatively higher or lower than their partner, respectively, and no dyads had members equal in levels of personality dominance. For all other dependent variables, we ran linear regressions with personality dominance, the power manipulation, their interaction, sex, and ethnicity as independent variables. Consistent with the findings from Study 1, participants' sex or ethnicity did not affect the influence and control they attained, their sense of power, or any of the dependent variables. Further, there were no interactions between personality dominance and sex or ethnicity or interactions between the effects of assigned power positions and sex or ethnicity.

## Results

*Influence in the task.* Consistent with Study 1, participants relatively higher in personality dominance moved less in their decisions (i.e., had more influence;  $M = 540.7$ ,  $SD = 381.6$ ; compared with  $M = 675.1$ ,  $SD = 426.4$ ),  $F(1, 65) = 3.56$ ,  $p < .05$ , one-tailed. Thus, this suggests that personality dominance was again related to the emergence of power differences, as influence is a common consequence of power. Further, participants randomly assigned to the high power position moved less in their decisions (i.e., had more influence;  $M = 512.4$ ,  $SD = 309.0$ ) than did participants randomly assigned to the low power position ( $M = 703.3$ ,  $SD = 471.8$ ),  $F(1, 65) = 7.61$ ,  $p < .01$ . This suggests that the power manipulation was effective in producing differences in

task influence. There was no interaction between personality dominance and assigned power.

*Expression of attitudes versus inhibition of attitude expression.* In Study 1, we found evidence suggesting that people with less power inhibited the expression of their attitudes more than did people with high power. Do people high in power also express their true attitudes and opinions more than do people low in power? Participants higher in personality dominance expressed their true attitudes and opinions more than did those lower in personality dominance ( $\beta = .34$ ),  $t(129) = 3.99$ ,  $p < .01$ . Further, participants randomly assigned to the high power position ( $M = 6.6$ ,  $SD = 0.7$ ) expressed their true attitudes and opinions more than did those assigned to the low power position ( $\beta = .19$ ;  $M = 6.2$ ,  $SD = 1.0$ ),  $t(129) = 2.29$ ,  $p < .05$ .

Consistent with the finding from Study 1, individuals low in personality dominance inhibited the expression of their attitudes more than did those higher in personality dominance ( $\beta = -.18$ ),  $t(129) = -2.00$ ,  $p < .05$ . Unexpectedly, however, the power assignment did not significantly affect inhibition in the expression of attitudes ( $\beta = -.03$ ;  $M = 2.3$ ,  $SD = 1.2$ ; compared with  $M = 2.2$ ,  $SD = 1.0$ ),  $t(129) = -0.37$ . There were no significant interactions between personality dominance and randomly assigned power in predicting either outcome.

*Emotional experience.* Consistent with Study 1, the relation between personality dominance and emotion was significantly moderated by the valence of the emotion ( $\beta = .31$ ),  $t(129) = 3.51$ ,  $p < .01$ . As presented in the second panel of Figure 1, this effect was driven by both the relation between personality dominance and positive emotion ( $\beta = .26$ ),  $t(129) = 2.84$ ,  $p < .01$ , and the relation between personality dominance and negative emotion ( $\beta = -.20$ ),  $t(64) = -2.17$ ,  $p < .05$ . Unexpectedly, the power manipulation did not significantly influence emotional experience. There were no interactions between personality dominance and randomly assigned power in predicting emotional experience.

*Perception of partner's liking.* Did power relate to participants' social perceptions in addition to their behavior and emotion? To address this question, we first focused on participants' perceptions of social rewards (i.e., their perceptions of how much their partner liked them).

Participants higher in personality dominance had more positive estimates of how much their partner liked them, relative to how much their partner actually liked them, compared with participants low in personality dominance ( $\beta = .37$ ),  $t(129) = 4.49$ ,  $p < .01$ . As shown in the first panel of Figure 2, this relation was significant primarily because individuals low in personality dominance underestimated how much their partner liked them. Participants higher in personality dominance were quite accurate in their estimations, only slightly overestimating how much their partner liked them.

Participants in the high power position had a more positive estimate of how much their partner liked them, relative to how much their partner actually liked them ( $\beta = .26$ ),  $t(129) = 3.25$ ,  $p < .01$ . The second panel of Figure 2 shows that this effect was driven largely by participants in the low power position, however, who underestimated how much their partner liked them; the underestimation effect among low power participants was significantly different from accuracy (or zero),  $t(64) = -5.00$ ,  $p < .01$ .

It is interesting that there was also a significant interaction between personality dominance and assigned power ( $\beta = .25$ ),

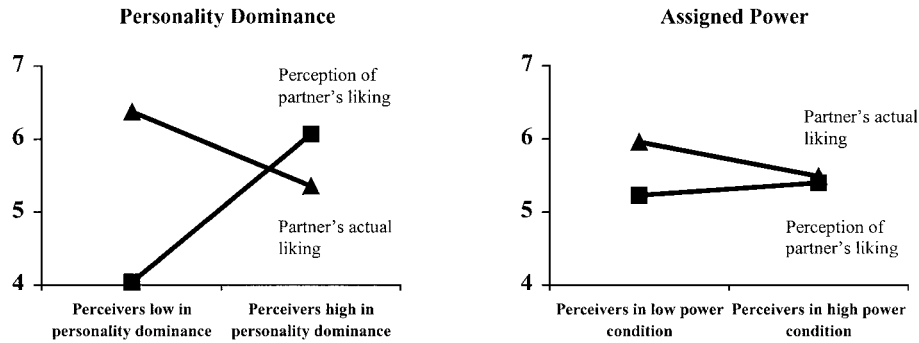


Figure 2. Study 2: Participants' perceptions of how much their partner liked them.

$t(129) = 3.07, p < .01$ . Simple effects tests showed that the effects of the power manipulation were stronger among participants higher in personality dominance ( $\beta = .32, t(64) = 2.73, p < .01$ ), than among participants lower in personality dominance ( $\beta = .20, t(64) = 1.52, p = .13$ ). This suggests that individuals higher in personality dominance were more sensitive to the power manipulation; that is, dominant individuals in the high power position overestimated how much their partner liked them ( $M = 0.4$ ), whereas dominant individuals in the low power position underestimated how much their partner liked them ( $M = -0.5$ ).

**Perception of partner's threatening emotions.** How did power affect participants' perceptions of social threats? Participants lower in personality dominance had higher estimates of how much their partner felt threatening emotions toward them, relative to how much their partner actually felt these emotions toward them, compared with participants higher in personality dominance ( $\beta = -.20, t(129) = -2.32, p < .05$ ). As shown in the first panel of Figure 3, this effect was due both to participants low in personality dominance overestimating their partner's threatening emotions and to participants high in personality dominance underestimating their partner's threatening emotions. Further, participants in the low power condition perceived more threatening emotions in their partner, relative to how much threatening emotion their partner actually felt ( $\beta = -.33, t(129) = -3.88, p < .01$ ). The means underlying this effect are presented in the second panel of Figure 3. As shown, participants in the low power position overestimated how much threatening emotion their partner felt toward them—the overestimation effect among low power participants was significantly

different from accuracy,  $t(64) = 2.60, p < .05$ —and participants in the high power position underestimated how much their partner felt these emotions toward them—the underestimation effect among high power participants was significant,  $t(64) = -2.60, p < .05$ . There was not a significant interaction between personality dominance and assigned power.

**Sense of power as mediator of the effects of personality dominance.** As in Study 1, we examined whether the sense of power mediated the relation between personality dominance and the outcome variables. Personality dominance significantly predicted all outcome variables, satisfying the first condition in all cases. The relation between personality dominance and the sense of power was also significant ( $\beta = .29, t(129) = 3.47, p < .01$ ). This satisfied the second condition. The third condition was satisfied for two outcome variables. After we controlled for personality dominance, the sense of power predicted the expression of attitudes ( $\beta = .22, t(129) = 2.55, p < .05$ ); it also predicted the perception of partner's liking ( $\beta = .26, t(129) = 3.11, p < .01$ ). The fourth condition was also satisfied for these two outcome variables. The indirect effect of the sense of power was significant for the expression of attitudes ( $Z = 2.16, p < .01$ ) and for the perception of partner's liking ( $Z = 2.44, p < .01$ ). Thus, these analyses suggest that the sense of power mediated the relation between personality dominance and the expression of attitudes and perception of partner's liking.

**Sense of power as mediator of the effects of assigned power.** Did the sense of power mediate the obtained effects of the power manipulation? The power manipulation significantly affected the

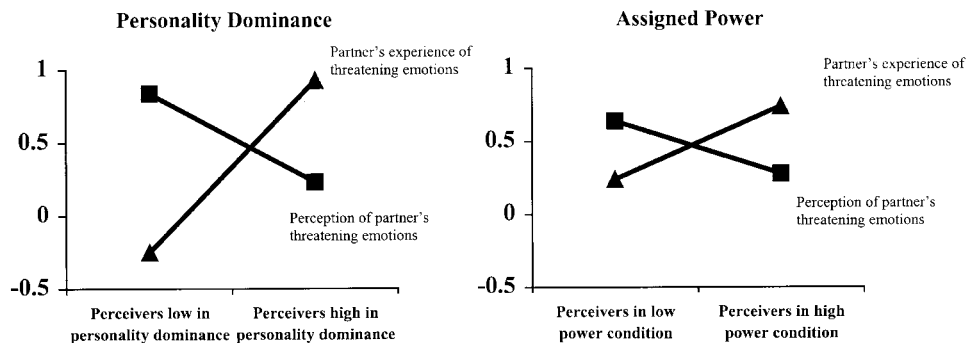


Figure 3. Study 2: Participants' perceptions of their partner's threatening emotions.

expression of attitudes, the perceptions of partner's liking (relative to partner's actual liking), and the perceptions of partner's threatening emotions (relative to how much their partner actually felt threatening emotions), satisfying the first condition for those outcome variables. The effect of assigned power on the sense of power was substantial ( $\beta = .42$ ),  $t(129) = 5.40$ ,  $p < .01$ ; this satisfied the second condition. The third condition was satisfied for both outcome variables. After we controlled for assigned power, the sense of power predicted the expression of attitudes ( $\beta = .27$ ),  $t(129) = 2.85$ ,  $p < .01$ , and it predicted participants' perceptions of how much their partner liked them after we controlled for assigned power ( $\beta = .28$ ),  $t(129) = 3.07$ ,  $p < .01$ . Finally, the fourth condition was also satisfied for both outcome variables. The effect of assigned power on the expression of attitudes was significantly reduced when we took into account the indirect effect of the sense of power ( $Z = 2.52$ ,  $p < .01$ ). Further, the effects of assigned power were significantly reduced when we took into account the sense of power ( $Z = 2.77$ ,  $p < .01$ ). This suggests that the sense of power mediated the effects of assigned power on participants' expression of attitudes and perceptions of how much their partner liked them.

It is interesting to note that personality dominance and assigned power interacted in predicting participants' sense of power ( $\beta = .20$ ),  $t(129) = 2.57$ ,  $p < .01$ . Thus, participants high in personality dominance were more affected by the power manipulation than were participants low in personality dominance—that is, dominant individuals showed a steeper regression slope across the two conditions than did less dominant individuals.

### Discussion

The findings from Study 2 are consistent with those from Study 1 but also extend them in a number of ways. Similar to Study 1, participants low in personality dominance showed signs of an activated inhibition system. They inhibited the expression of their attitudes, they experienced more negative emotion, and they overestimated how much their partner felt threatening emotions toward them (i.e., anger, contempt, and disgust). The findings from Study 2 suggest that people high in personality dominance had an activated approach system—they expressed their true attitudes and opinions and experienced more positive emotion. Moreover, they were accurate in estimating how much their partner liked them, compared with participants low in personality dominance, who underestimated how much their partner liked them. Thus, participants high in personality dominance seemed to be more attentive to their partner's (rewarding) cues that signal liking.

In Study 2 we also obtained some effects for randomly assigned power. Participants assigned to the low power position underestimated how much their partner liked them, and they overestimated how much threatening emotion their partner felt toward them. In contrast, participants in the high power position expressed their true attitudes and opinions more, they were accurate in perceiving how much their partner liked them, and they underestimated the extent to which their partner felt threatening emotions toward them.

Unexpectedly, there were not significant effects for assigned power on the inhibition of expressing attitudes or on emotional experience. This suggests that situational power may have to be quite strong to produce inhibition and to affect emotional experi-

ences—something that may be difficult to manipulate in a laboratory setting. The power a boss has over a subordinate in a real world situation, for example, is considerably greater and results in ongoing and more meaningful control over rewards and punishments than is possible to simulate in the laboratory.

Consistent with the findings from Study 1, we found that participants' sense of power in the dyadic interaction mediated many of the relations between personality dominance and the outcome variables. Specifically, the sense of power mediated the relation between personality dominance and the expression of attitudes and the bias to perceive partner's liking. We also found that the sense of power mediated the effects of randomly assigned power on participants' expression of attitudes and opinions and on their tendency to perceive their partner's liking. Therefore, these findings further support the idea that the sense of power is a key component in the effects of power. That is, power influences social behavior not only because of differences in material and social environments but also because it makes people feel high or low in power.

Finally, personality dominance and assigned power interacted in predicting participants' tendency to perceive their partner's liking and in influencing participants' sense of power. This suggests that for some effects, having high power might more strongly affect people higher in personality dominance.

### General Discussion

The primary aim of the current research was to test hypotheses derived from the approach/inhibition theory of power (Keltner et al., in press). In two studies of decision-making dyads we found preliminary support for the theory, focusing on personality dominance and control over resources as bases of power. Participants who either were higher in personality dominance or assigned control over resources exhibited many signs that their behavioral approach system was more active: They expressed their true attitudes and opinions, felt more positive relative to negative emotion, and were more likely to perceive social rewards (i.e., that their partner liked them and liked working with them). In contrast, participants lower in personality dominance or who were assigned no control over resources exhibited many signs of a more activated behavioral inhibition system: They inhibited the expression of their attitudes, felt more negative emotion, and were more likely to perceive threats (i.e., their partner's threatening emotions felt toward them).

Personality dominance related to more outcomes than did assigned power. We believe that this highlights the difficulties of manipulating actual power in the laboratory rather than casts doubt on the approach/inhibition theory of power. In particular, many studies of power have relied on role-playing techniques to manipulate power. Although these methods have been effective and provided valuable insights in our understanding of power, they need to be augmented with studies that randomly assign control over real outcomes. Although the current studies were not fully successful in creating differences in power among participants, they are a first step in developing a power manipulation technique that involves control over real outcomes.

In providing preliminary evidence for the approach/inhibition theory of power, the current research makes its most important contribution to the study of power. As the findings from the current

studies also have implications for specific areas of research, however, we address these implications below. For simplicity's sake, we often just refer to *high power* and *low power* in the discussion below, collapsing the effects of personality dominance and assigned power in the studies.

### *Power and the Expression of Attitudes*

Our findings suggest that people with high power express their true attitudes and opinions more than do people with low power, whereas participants with lower power inhibit themselves from expressing their attitudes and opinions more than do people with high power. These findings contribute to research that has linked power to the amount individuals speak in social interactions (e.g., Aries et al., 1983; Bales et al., 1951; Cashdan, 1998; Dovidio et al., 1988; Leffler et al., 1982; Stein & Heller, 1979). Although the relation between power and amount of speech has typically been attributed to interpersonal factors—people with more power are given more chances to speak by others—the current research suggests that this finding might be due to self-censorship as well. That is, people with low power might not only be given fewer chances to speak but might keep themselves from speaking when given the chance. This finding thus builds on classic work on social conformity (Asch, 1955) and obedience to authority (Milgram, 1963), which showed that people in ostensibly low power positions keep their attitudes to themselves.

The finding that people with low power censor themselves relative to those with high power has implications for the study of social hierarchies. As many theorists have argued, hierarchical positions in groups are often allocated to group members according to their contributions: The more group members provide for their group's goals, the higher the position they are allocated is (Barkow, 1975; Berger et al., 1980; Eibl-Eibesfeldt, 1989; Owens & Sutton, 2001). If people with less power keep themselves from expressing their ideas, they are less able to contribute to the group and thus less able to attain higher standing. In essence, their self-censorship might serve to maintain the status quo.

This finding also has implications for group performance. Much research has examined how to maximize group performance by highlighting the factors that encourage or discourage group members from participating (e.g., Michaelsen, Watson, & Black, 1989). In Study 2, individuals' sense of power was an important predictor of how much they participated—or, in other words, how much they contributed to their dyad's performance. Therefore, one way to maximize group performance might be to make all group members feel powerful enough to voice their attitudes and ideas. Consistent with this idea, groups with more egalitarian structures have been shown to perform better on generative tasks than groups with more hierarchical structures (Berdahl & Anderson, 2002).

It should be noted that the current studies did not include a control condition in which both dyad partners were equal in power. The inclusion of such a condition would have allowed us to conclude more confidently that having lower power led participants to inhibit the expression of attitudes and opinions, relative to having equal power to others, and that having high power led to a greater expression of attitudes and opinions, relative to having equal power to others. On a broader level, such a control condition would also allow us to more confidently argue that, relative to conditions of equal power, people with high power have an active

approach system, and people with low power have an active inhibition system. It is important, therefore, that future research include control conditions in which participants are equal in power.

### *Power and Emotional Experience*

We found evidence that dominant individuals (who had more influence) experienced more positive emotion, whereas less dominant individuals experienced more negative emotion. It is important to note that these findings directly implicate a link between power and emotional experience. Although previous research has examined the relation between power and emotional displays (e.g., Cashdan, 1998; Deutsch, 1990; Dovidio et al., 1988; Ekman, 1971; Hall & Friedman, 1999; Hecht & LaFrance, 1998) or has examined the power ascribed to individuals who experience certain emotions (Keating et al., 1981; Knutson, 1996; Tiedens et al., 2000), little work has examined how high or low power makes people feel. These findings provide preliminary support for the concept that people high in power tend to feel more positive emotion, whereas people low in power tend to feel more negative emotion.

It is worth discussing how the current findings can be reconciled with some seemingly contradictory findings. Previous research has shown that high power is linked with the experience and expression of anger, a negative emotion; specifically, individuals ascribe higher power to others who either express (Knutson, 1996) or experience anger (Tiedens et al., 2000). Further, individuals ascribe lower power to individuals who experience gratitude, a positive emotion (Tiedens et al., 2000). One way to reconcile these findings with those from the current research is to point out the potential inaccuracy of social perceivers' judgments. In other words, participants in those studies may have made inaccurate attributions of higher power to individuals who showed or felt anger. Although this idea might hold some truth, we think there are two other, more likely explanations.

First, a crucial distinction might lie between the emotions individuals feel and the emotions they express. People with low power might feel more anger than people with high power, for example, but they might be less likely to show it. This idea received some support in Study 2: Participants with low power felt higher amounts of threat emotions, including anger, yet their partners thought they felt lower amounts of these emotions. One reason behind this underestimation might be that low power participants were not expressing their anger overtly.

Second, it might be important to distinguish between emotions that individuals feel or show on average or across events and emotions that individuals feel or show in unique contexts. Specifically, individuals with higher power might experience less negative emotion most of the time, but when situations arise in which they must communicate their power, they might be more likely to experience and express emotions such as anger (Clark, 1990; Frijda & Mesquita, 1994; Kemper, 1991). Further, people with high power might feel negative emotions toward others when they must use strong influence tactics to motivate those others (Kipnis, 1972, 1976).

### *Power and Social Perception*

In Study 2, we found that participants with less power underestimated how much their partner liked them, whereas participants

with high power positions were relatively accurate in perceiving how much their partner liked them. We also found that participants with high power underestimated the threatening emotions their partner felt toward them, whereas participants with low power overestimated their partner's threatening emotions.

One important limitation of the perception findings is that we do not know whether they were due to perceivers' perceptual sensitivity, targets' clarity in their expressions, or both (e.g., Hall & Halberstadt, 1997; Snodgrass, 1985, 1992; Snodgrass, Hecht, & Ploutz-Snyder, 1998). For example, individuals in the high power condition could have more accurately perceived how much their partner liked them, relative to individuals in the low power condition, because (a) they were more sensitive to their partner's expressions of liking, (b) their partner was more expressive of their liking, or (c) a combination of both. Further, difference scores such as this can be somewhat dependent on the extremity of scores—for example, if targets generally felt very low levels of threatening emotions, then others' perceptions would more likely be overestimations than underestimations.

However, at the very least, these findings suggest that the relation between power and social perception is not as simple as the subordination hypothesis proposes. As our results show, high power participants were actually more accurate in perceiving how much their partner liked them, and high and low power participants were about equally (in)accurate in their perceptions of threat emotions felt by their partner. Therefore, the relation between power and perceptual accuracy might depend on the specific target being perceived (for a similar discussion, see Snodgrass, 1985, 1992). Ultimately, the effects of power on social perception might center on how power affects specific perceptual sensitivities rather than how it affects overall perceptual accuracy. Future research should thus focus on identifying aspects of the social environment to which high and low power people are more sensitive.

### *The Sense of Power as a Mediator*

According to the approach/inhibition theory of power, power leads to a more active approach system and a less active inhibition system for two reasons: First, the environments of powerful and powerless people differ in terms of the rewards and threats present, and, second, powerful people feel higher in power than do powerless people, leading them to approach more and inhibit less. Our mediational analyses support the latter notion, suggesting that the subjective sense of power mediates at least some of the effects of power. Across both studies, we found that the sense of power mediated many of the relations between personality dominance and the outcome variables, and the effects of assigned power. These results thus complement previous research highlighting the importance of perceived social standing (N. E. Adler et al., 2000; Bugental & Lewis, 1999). The fact that the sense of power did not mediate many other effects, however, suggests that other mediators are at work—for example, the differential presence of rewards and threats in the environments of the powerless and the powerful.

### *Approach, Inhibition, and Corruption*

In understanding the myriad effects of power, it is extremely helpful to organize them around broad theoretical frameworks. The approach/inhibition theory of power shows promise in providing

such a framework. Many behaviors exhibited by people high in power—leaders, majority members, people high in socioeconomic status—seem to be more approach oriented. In contrast, many behaviors exhibited by those low in power—followers, minority members, people low in socioeconomic status—seem inhibited in orientation. Further, more direct tests of the approach/inhibition theory of power provide preliminary evidence for the theory. However, future research needs to further test the approach/inhibition theory of power, examining other approach- and inhibition-oriented social behaviors, other social contexts, other forms of power, and other measures of mediators.

The approach/inhibition theory of power does not necessarily contradict other theories of power, such as Kipnis's (e.g., Kipnis, 1976) idea that power corrupts. Instead, these different theories of power can be seen as complementary. That is, the diverse effects of power might best be organized around a few general principles. Some of the effects of power might stem from its corrupting influence, and other effects might stem from a tendency to approach and a lesser tendency to inhibit.

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Received June 12, 2001

Revision received April 16, 2002

Accepted April 22, 2002 ■

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- For *Psychological Assessment* (<http://www.apa.org/journals/pas.html>), submit manuscripts to **Milton E. Strauss, PhD**, Department of Psychology, Case Western Reserve University, Cleveland, OH 44106-7123.
- For *Journal of Family Psychology* (<http://www.apa.org/journals/fam.html>), submit manuscripts to **Anne Kazak, PhD**, ABPP, Oncology Psychosocial Research, The Children's Hospital of Philadelphia, Room 1486 (Market Street), 34th and Civic Center Boulevard, Philadelphia, PA 19104. For overnight couriers: Room 1486, 3535 Market Street, Philadelphia, PA 19104.
- For *Journal of Experimental Psychology: Animal Behavior Practices* (<http://www.apa.org/journals/xan.html>), submit manuscripts as of January 15 to **Nicholas Mackintosh**, Department of Experimental Psychology, University of Cambridge, Downing Street, Cambridge, CB2 3EB, United Kingdom.
- For *Journal of Personality and Social Psychology: Personality Processes and Individual Differences* section (<http://www.apa.org/journals/psp.html>), submit manuscripts to **Charles S. Carver, PhD**, Department of Psychology, University of Miami, P.O. Box 248185, Coral Gables, FL 33124-2070.

**Electronic submission:** As of January 1, 2003, authors will be expected to submit manuscripts electronically through the journal's Manuscript Submission Portal (see the Web site listed above with each journal title). Authors who are unable to do so should correspond with the editor's office about alternatives.

Manuscript submission patterns make the precise date of completion of the 2003 volumes uncertain. Current editors Leah L. Light, PhD, Stephen N. Haynes, PhD, Ross D. Parke, PhD, Mark E. Bouton, PhD, and Ed Diener, PhD, respectively, will receive and consider manuscripts through December 31, 2002. Should 2003 volumes be completed before that date, manuscripts will be redirected to the new editors for consideration in 2004 volumes.