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NONCONSCIOUS EFFECTS OF POWER ON BASIC APPROACH AND AVOIDANCE TENDENCIES

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According to the approach/inhibition theory of power (Keltner, Gruenfeld, & Anderson, 2003), having power should be associated with the approach system, and lacking power with the avoidance system. However, to this point research has focused solely on whether power leads to more action, particularly approach–related action, or not. In three experiments, we extend this research by exploring the direct, unintentional relation between power and both approach and avoidance tendencies. Priming high power led to greater relative BAS strength than priming low power, but did not affect the BIS (Exp. 1). High–power priming also facilitated both simple and complex approach behavior, but did not affect avoidance behavior (Exp. 2–3). These effects of power occurred even in power–irrelevant situations. They also cannot be explained by priming of general positive versus negative constructs, nor by changes in positive, negative, approach–related, or avoidance–related affect.

Behavior is driven by two fundamental action tendencies: approach and avoidance (e.g., Carver, 2001; Higgins, 1997; Miller, 1944). A dog chasing a rabbit, a child recoiling from the smell of cooked spinach, a procrastinating graduate student turning and walking in the other direction at the sight of his or her advisor: approach–avoidance processes are exhibited by creatures both great and small,

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from human beings to single–cell organisms. As these examples demonstrate, the approach system generally responds to rewards and opportunities, and the avoidance system responds to threats and punishments. These two systems exert unique influences on action, motivation, and emotion.

In their integrative review of the effects of social power, Keltner and colleagues (2003) recently proposed that power, as a fundamental dimension of human interaction, affects the activation of these two motivational systems. As explained in their approach/inhibition theory of power, power is associated with resources and constraints. Those with power possess more resources and experience fewer constraints than those without power. Since high power involves such a rewarding context, it would be likely to activate the approach system. Similarly, the more constrained, restrictive context of low power would be likely to activate the avoidance system.

Until now, research addressing this theory has focused on one kind of action tendency, approach. Researchers have only explored how power affects individuals' likelihood of acting, specifically of performing approach–related action, as opposed to not acting at all. That is, they have focused on approach versus inhibition. In the present research, we build upon and expand this research by looking at both kinds of action tendencies, by looking at both approach and avoidance. We also propose that power does not just affect whether individuals take action or not (i.e., approach versus inhibition), but that it also affects the type of behavior individuals exhibit: whether they approach stimuli or actively move away from and avoid them. Relatively high power should facilitate approach behaviors, and low power should facilitate avoidance behaviors.

POWER AND APPROACH/AVOIDANCE SYSTEMS

Although different research camps use different terminology to describe the approach and avoidance systems, there is general agreement that these systems are linked to certain categories of affective, cognitive, and behavioral processes dealing with rewards and threats, respectively (e.g., Carver & White, 1994; Davidson, 1998; Elliot, 2006; J. A. Gray, 1991). The approach system guides behavior related to rewards and opportunities. These incentives activate approach–related processes, including heightened sensitivity to rewards and actual approach behavior, that help an individual pursue relevant goals. The avoidance system guides behavior in response to threats and punishment. This system activates avoidance–related processes, including heightened vigilance for threats and avoidance. In other words, these are broad systems that guide action.

The approach/inhibition theory of power (Keltner et al., 2003) proposes that power should influence the relative activation of these two systems. Why should a social construct like power be linked to such basic behavioral systems? Power is associated with resources and punishments (e.g., Fiske, 1993; Keltner et al., 2003; Thibaut & Kelley, 1959). Elevated power should activate the approach system because powerful individuals (1) live in environments with more abundant rewards and resources, (2) are, by definition, better able to attain their important goals, and (3) feel unconstrained by others' evaluations or the consequences of their actions. Having power provides greater access to resources: material goods such as money, social resources such as praise, and so on (e.g., Keltner, Young, Heerey, Oemig, & Monarch, 1998; Operario & Fiske, 2001). It thus creates the type of rewarding con-

text that would activate the approach system. Furthermore, because having more power implies being less dependent on others (Dépret & Fiske, 1993), those who have power have fewer constraints and encounter less interference when pursuing rewards (Weber, 1947).

In contrast, the lack of power should activate the avoidance system because powerless individuals (1) live in environments with fewer resources and greater potential for punishment, and (2) are aware of the social constraints placed upon their behavior because others control their outcomes. Lacking power means a person not only has less access to resources, material and otherwise, but also is more subject to social threats and punishments (e.g., Anderson & Berdahl, 2002; Fiske, 1993). It thus creates the type of negative, threatening context that would activate the avoidance system. Furthermore, because lacking power implies increased dependence on others, those who lack power are sensitive to how other people evaluate them and encounter more constraints and interference (Keltner et al., 2003).

We do not want to paint a purely black–and–white picture of the circumstances of having and lacking power. Having power does not lead to absolute freedom, just as lacking power does not involve constant punishment. Increased power often brings with it increased responsibility. Meanwhile, because those with less power have less access to resources, they also have less to lose if they fail or make an error in judgment. Instead, we argue that the *primary* characteristics of having power involve rewards, and the *primary* characteristics of lacking power involve threats and punishments (we will return to this point in the General Discussion). This makes sense because when we talk about power, we are talking, at its core, about control. Power involves control: over resources, over outcomes for both oneself and others (Fiske, 1993; French & Raven, 1959; Keltner et al., 2003). People need control. In fact, the need for control is a core social motive critical to psychological functioning (Fiske, 2003; Skinner, 1996; Winter, 1973). If control is such a primary need, and having power involves having control, and lacking power involves lacking control, it is logical that having power would be, at its essence, rewarding, and lacking power would be punishing.

The research on power to date bears this out. The documented response patterns[1] of people with high and low-power suggest that having power leads to approach, and lacking power leads to avoidance (see Keltner et al., 2003, for a thorough review). Those with power *do* more: They are more extraverted, talk more, interrupt more, and are more likely to speak out of turn than low power individuals (e.g., Anderson, John, Keltner, & Kring, 2001; DePaulo & Friedman, 1998; Galinsky, Gruenfeld, & Magee, 2003). They are also more likely to behave in line with their

1. Some common stereotypes of powerholders seem to involve avoidance behaviors. For example, high–power individuals are thought to refuse to take phone calls more often than low–power people, or a high–power person is expected to be more likely to send back an unappetizing meal at a restaurant. This anecdotal evidence must be examined critically. First, in some of these cases, it is not clear how much the stereotypes are based on reality. It may be that avoidance behavior shown by high–power people is more impactful, rather than more frequent, and thus is well remembered and becomes stereotyped. Second, some of these avoidance behaviors may be used by high–power people in the service of a higher–order approach goal. The unappetizing dish may be refused to fulfill the goal of a fabulous meal. Future research should explore how approach and avoidance goals are structured within the goal hierarchies (Kruglanski et al., 2002) of low–power and high–power individuals. However, addressing all these behaviors is beyond the scope of this article. We do want to emphasize that the published research to date, as demonstrated in Keltner, Gruenfeld, and Anderson (2003) and subsequent papers on higher–order behavioral effects, provides thorough support for high power leading to approach, and not avoidance.

own core personal values (Chen, Lee Chai, & Bargh, 2001). Those without power tend to be more inhibited, as shown in their postural constriction and reduced gestural activity (Ellyson & Dovidio, 1985). Because having power is associated with approach, and lacking power leads to avoidance, changing a person's motivational orientation affects the person's interest in these groups (Sassenberg, Jonas, Shah, & Brazy, 2007). For example, Sassenberg and colleagues found that individuals primed with approach cues were more interested in being part of a high–power group than individuals primed with avoidance cues. This increase in interest was driven by the expectation that a high–power group would better allow them to express their heightened approach tendencies.

The bulk of this supportive research has relied on preexisting power differences or overt experimental manipulations of power (e.g., Anderson & Berdahl, 2002, Exp. 2). However, the link between power and approach/avoidance can also operate nonconsciously, that is, without individuals being aware that the concept of power has been activated and/or that behavior is being influenced by it (Bargh, 1994). Power is a psychological concept mentally represented in most, if not all, people, and, like any other concept, it is linked in memory to a host of cognitive, affective, and behavioral tendencies. When the construct of power is activated, whether via actual experience of a powerful or powerless role or by mere exposure to cues related to power or powerlessness, those same associated concepts and behavioral tendencies should also be activated (Bargh, 1997; Bargh & Raymond, 1995). That is, power seems to have similar effects regardless of how it is activated (e.g., Anderson & Berdahl, 2002; Anderson & Galinsky, 2006; Bargh, 1997; Chen et al., 2001; Galinsky et al., 2003). Some preliminary evidence for a nonconscious link between power and approach/avoidance can be found in recent research on power and action (Galinsky et al., 2003) and on power and risk–taking (Anderson & Galinsky, 2006). Individuals primed with or given high power take more action, and are more willing to take risks, than participants primed with or given low power.

The link between power and action is particularly relevant for our research. A possible explanation for this effect is that power activated the approach system, thereby increasing the likelihood of (any) action, and the extent or intensity of it. However, we propose that the link between power and the approach and avoidance systems is about more than action versus nonaction/inhibition. The work by Galinsky and colleagues (2003) focused on how power affected whether participants acted or not. We are interested in how power affects different *kinds* of action. Approach behavior clearly involves action, but avoidance behavior also involves action—movement away from a stimulus. Doing nothing and actively moving away are two very different responses often resulting in very different consequences. Avoidance behaviors increase an individual's distance from a stimulus, while behavioral inhibition does not alter that distance.

Up to this point, research on the approach/inhibition model has conflated action and approach. That is, if participants in these studies chose to act, the only type of behavior available was approach behavior: they could move a fan (Galinsky et al., 2003), choose to have sex without a condom (Anderson & Galinsky, 2006), or express their feelings (Berdahl & Martorana, 2006), for example, or they could do nothing. These studies did not allow for an active response that was also an avoid-

2. In fact, as Elliot (2006) has recently described, both approach and avoidance can involve action and inaction. Because our work focuses on action, we will not delve into the inaction side of the approach system.

ance or withdrawal response.[2] In contrast to inhibition, which passively cedes control of a situation to other forces, avoidance is an active response. It is possible that when avoidance responses are possible, individuals without power may show just as much action as those with power—except it is action in the opposite direction. In our research, we focus on avoidance in addition to approach.

The distinction between avoidance and inhibition is important because it adds a level of specification to the relationship between power and action. As it stands, the idea is general: Power leads to more goal–directed behavior. However, goals can be achieved both by approaching things that one wants and by avoiding things that one does not want (Elliot, 2006; Higgins, 1997). If power simply facilitates goal–directed behavior, power should be associated with more approach–related behavior and with more avoidance–related behavior. We propose that the relation between power and action needs to be qualified: Power should facilitate only approach behavior. Avoidance behavior, if anything, should be associated with powerlessness.

This distinction is also important because the approach/inhibition theory implies that low and high power act on separate domains (Keltner et al., 2003). Keltner and his colleagues hypothesize that having power activates one system, and lacking power activates the other system. As Moskowitz (2004) also points out, activating one system does not imply that the other system is inhibited. To understand the relation between power and these two systems, measures must be used that allow for approach and avoidance to be measured separately.

OVERVIEW OF EXPERIMENTS

In three experiments, we explored whether power leads to approach–related processes, and powerlessness to avoidance–related processes. One influential conceptualization of the approach and avoidance systems is J. A. Gray's (1982, 1987, 1991) theory of the behavioral action system (BAS) and the behavioral inhibition system (BIS). Thus, in Experiment 1 we tested the hypothesis that high power activates the BAS, and low power the BIS, using standard scales measuring activation of the two systems (Carver & White, 1994). In the remaining two experiments, we examined whether power affects approach and avoidance behavior. In Experiment 2, participants responded to stimuli by moving a figure toward the stimuli or away from them (De Houwer, Crombez, Baeyens, & Hermans, 2001; Moors & De Houwer, 2001) to simulate approach and avoidance. In Experiment 3, such behavior was measured directly by how far participants sat from a supposed other student. In all three experiments, we primed high and low power either semantically using a scrambled sentences task (Smith & Trope, 2006) or via writing about previous experience (Galinsky et al., 2003).

All experiments also included a control condition. This condition served as a baseline to allow us to further clarify the relation between power and approach versus avoidance. The approach/inhibition theory of power posits that the links between power and the two systems are symmetrical (Keltner et al., 2003). However, limited data exist speaking to the direction of the effects. As Moskowitz (2004) emphasized, researchers must move beyond two–group, low–versus–high–power designs to resolve this issue. So far, studies investigating the approach/inhibition theory that have included a control group have found significant effects of high power, but not of low power (e.g., Anderson & Galinsky, 2006; Galinsky et al., 2003). Therefore, we are confident in our prediction that high power will facilitate only approach–related be-

havior. Due to this dearth of significant effects of low power, our prediction that low power will facilitate avoidance–related behavior is more tentative.

Furthermore, in two of the three experiments (Experiments 1 and 2), approach and avoidance were measured separately. This allowed us to disentangle the influence of having versus lacking power on approach versus avoidance. Keltner and colleagues (2003), as well as those who have done research to test their theory, assumed that having power activated the approach system, and lacking power separately activated the avoidance system. This is logical, as these two systems have a history of being treated as distinct systems that do not influence each other (e.g., Carver & White, 1994; Coan & Allen, 2003; J. A. Gray, 1982, 1987, 1991).

To further advance the idea of a direct link, we address potential mediators. Mood is the most obvious alternative explanation. The approach and avoidance systems have been theoretically linked with positive and negative affect (e.g., J. A. Gray, 1991). The experience or mere priming of power or powerlessness may affect mood (Keltner et al., 2003), and these changes in mood might then mediate our results.

However, the relation between these systems and mood is more complicated than a simple mapping of each system onto one and only one hedonic tone (e.g., Carver, 2001). For example, standard markers of BAS and BIS activation are not always related to self–reported positive and negative mood (e.g., Harmon–Jones & Allen, 1998; Sutton & Davidson, 1997). The approach and avoidance systems have also been directly activated and influence individuals' processing styles and actions, all without altering mood (e.g., via arm flexion and extension: Friedman & Förster, 2000, 2002), and measures of the BAS and BIS have unique predictive value when mood has been adjusted for (Gomez & Gomez, 2002; Urry et al., 2004). Furthermore, power has been shown to affect behavior without affecting mood (Anderson & Berdahl, 2002; Galinsky et al., 2003; but see Berdahl & Martorana, 2006, for a discussion of when power should and should not affect mood). Thus, it is clear that these systems can be activated via changes in power and influence cognitions and behavior without any type of affect playing a role, so we expected affect not to play a role in our experiments. To rule out mood as a mediator, it was measured in all three experiments.

EXPERIMENT 1

Although there is general agreement that the approach and avoidance systems exist in a broad sense, the particulars of the two systems have been described differently by various research groups. One of the most well–known and influential conceptualizations has been J. A. Gray's (1982, 1987, 1991) theory of the behavioral action system (BAS) and the behavioral inhibition system (BIS). In fact, this was one of the two theories that inspired Keltner and colleagues' (2003) approach/inhibition theory of power. We chose to operationalize the approach and avoidance systems in terms of the BAS and BIS for our initial experiment because of the wealth of BAS/BIS research existing in the social psychology, personality psychology, and neuropsychology domains (e.g., Avila, 2001; Carver & White, 1994; Coan & Allen, 2003, 2004; J. R. Gray & Burgess, 2004; Harmon–Jones & Allen, 1997; Hewig, Hagemann, Seifert, Naumann, & Bartussek, 2004; Sutton & Davidson, 1997; Wacker, Heldmann, & Stemmler, 2003). If having power facilitates the approach system and

lacking power facilitates the avoidance system, then priming low versus high power should affect the relative strength or activation of the BAS versus the BIS.

We also chose to begin with the BAS and the BIS because a well–validated, standardized measure exists for the strength of these two systems, the BIS/BAS Scales (Carver & White, 1994). To test whether increased power activates the BAS, and reduced power activates the BIS, participants were first primed by writing about a time when they either had power or lacked it. Participants in a control condition wrote about a neutral topic. Then participants completed the BIS/BAS Scales. These scales uniquely predict cognitive, affective, and behavioral indicators as well as neural markers (Coan & Allen, 2003; Harmon–Jones & Allen, 1997; Sutton & Davidson, 1997) of approach and avoidance. The scales are generally thought to measure a trait or general disposition rather than a state, befitting the tendency to focus on individual differences in approach and avoidance in past research (e.g., Carver & White, 1994; Elliot & Thrash, 2002). However, trait measures are known to be influenced by priming and other contextual manipulations. For example, having individuals first think in a more abstract fashion affects their self-ratings on power–related traits (Smith, Wigboldus, & Dijksterhuis, in press). Thinking of or encountering particular person targets changes participants' self-ratings on the Revised Interpersonal Adjectives Scale (Stapel & Van der Zee, 2006; Tiedens & Jimenez, 2003; Wiggins, Trapnell, & Phillips, 1988). Similarly, we expected that first writing about a time when they either lacked or had power would change participants' responses to the BIS/BAS Scales, reflecting changes in approach and avoidance tendencies.

Mood was measured both at the beginning of the experiment and again immediately after the priming task to test whether priming affected mood and if these changes in mood mediated any priming effects. We used a standardized measure that allowed for separate assessment of positive and negative mood, the Positive Affect Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). In line with past research, we expected that power's effects on the BAS and BIS would not be mediated by mood.

METHOD

Participants. Ninety–nine undergraduate students from a large U.S. university participated for course credit or $5. One participant was dropped from the analyses because her English was very poor. Overall, 98 participants (72 females)[3] were used in the analyses. Average age was 20.6 years (SD = 3.0).

Procedure and Materials. The experimenter told participants that she was investigating how different environments affected responses to cognitive tasks, and if these effects changed over time. They would thus complete a series of standardized tasks, some of them more than once. They were then handed a packet of tasks and told to complete them in the order they were stapled together.

The first few tasks were filler questionnaires, followed by the first PANAS (Watson et al., 1988). The PANAS consists of 20 words denoting 10 positive emotions (e.g., interested) and 10 negative emotions (e.g., jittery). Participants rated on a 5–point scale how much they felt each emotion at that present moment.

3. In this and the following two experiments, the sex of the participant did not moderate any of the hypothesized effects of power on approach and avoidance behavior.

Next in the packet was the writing task, adapted from Galinsky and colleagues (2003), which served as the prime of low or high power or as the control prime. Low–power–primed (LPP) participants wrote about "a particular time or incident in which someone else had control over you." High–power–primed (HPP) participants wrote about "a particular time or incident when you had control over another individual or individuals." Control participants wrote about "your day yesterday." All were instructed to provide as much detail as possible in the 15 blank lines provided.

Participants next completed the PANAS a second time. They then filled out the BIS/BAS Scales (Carver & White, 1994). The 13 BAS items and 7 BIS items were intermixed in a fixed random order. The BAS items tap into such approach responses as eager goal pursuit, responsiveness to rewards, and reward or pleasure seeking (e.g., "I go out of my way to get the things I want," "When I see an opportunity for something I like, I get excited right away"). The BIS items tap into avoidance responses in the face of perceived threat (e.g., "I feel pretty worried or upset when I think or know somebody is angry at me," "I worry about making mistakes"). For each item, participants indicated how much they agreed at the moment on a scale from 1 (*strongly disagree*) to 4 (*strongly agree*). When participants handed in the completed packet, they were probed for suspicion and debriefed. None of the participants thought the experiment was about the effects of power, and all participants reported being unaware of any influence of the priming task on their responses to the BIS/BAS Scales.

RESULTS AND DISCUSSION

Manipulation Check. Using a 7–point scale (0 = *no power at all*, 6 = *a lot of power*), two independent judges blind to condition ($\alpha = .81$) coded the low– and high–power writing for how much power the participant seemed to have had. HPP participants ($M = 5.00$, $SD = 0.76$) were judged to have had more power in the situation they described than LPP participants ($M = 1.72$, $SD = 0.76$), $F(1, 66) = 316.75$, $p < .001$, $\eta_p^2 = .83$.

BIS/BAS Scales. Responses to the BAS items and the BIS items were averaged to create separate measures of BAS and BIS strength. A 2 (Scale: BAS vs. BIS) × 3 (Priming Condition: low power vs. control vs. high power) mixed–model ANOVA was run on these measures, with the last factor between subjects. Only a significant Scale × Priming Condition interaction emerged, $F(2, 95) = 2.95$, $p = .02$, $\eta_p^2 = .08$. The means are listed in Table 1.

What about separate effects of power on the BAS and the BIS? Power significantly affected participants' responses to the BAS Scale. HPP participants reported higher BAS strength than both LPP participants, $t(66) = 2.29$, $p = .03$, and control participants, $t(62) = 2.04$, $p < .05$. LPP participants and control participants did not differ, $p = .81$. The three priming conditions did not differ in their responses to the BIS Scale. LPP participants showed a nonsignificant tendency toward higher BIS strength than HPP participants, $p = .19$, but LPP and control participants did not differ, $p = .42$, nor did HPP and control participants, $p = .55$. In other words, high–power priming appears to facilitate the BAS, but low–power priming does not inhibit the BAS. Effects on the BIS were in the predicted direction but nonsignificant.

To further explore this interaction, participants' BIS score was subtracted from their BAS score to obtain a measure of relative BAS strength. HPP participants had significantly higher relative BAS strength than LPP participants, $t(66) = 2.90$, $p =$

TABLE 1. Strength of BAS and BIS by Condition, Experiment 1

Condition	BAS	BIS
Low Power	2.87 (0.46)	3.11 (0.53)
Control	2.90 (0.43)	3.01 (0.43)
High Power	3.09 (0.32)	2.94 (0.54)

Note. Standard deviations are in parentheses.

.006. (In fact, the score for LPP participants differed significantly from zero, $p = .01$, indicating that they showed more BIS than BAS strength.) Control participants tended to differ from HPP participants, $t(62) = 1.72$, $p = .09$, but did not differ from LPP participants, $p = .35$. In other words, HPP participants had higher relative BAS strength than LPP participants and (to a lesser extent) control participants.

How can we be certain that our results were driven by power? After all, participants who wrote about a time when they had power probably wrote about a fairly positive experience, and participants who wrote about a time when they lacked power probably wrote about a fairly negative experience. Perhaps it is these valence differences that drove our effects. To test this possibility, the same two judges who coded the low–power and high–power stories for power also rated separately how positive ($\alpha = .84$) and negative ($\alpha = .82$) each low–power and high–power story was, using 7–point scales (0 = *not positive/negative at all*, 6 = *extremely positive/negative*). Stories written by HPP participants ($M = 3.56$, $SD = 1.34$) were rated as more positive than stories written by LPP participants ($M = 1.64$, $SD = 1.25$), $F(1, 64) = 36.20$, $p < .001$, $\eta_p^2 = .36$. Stories written by HPP participants ($M = 2.05$, $SD = 1.49$) were also rated as less negative than stories written by LPP participants ($M = 3.97$, $SD = 1.30$), $F(1, 64) = 31.37$, $p < .001$, $\eta_p^2 = .33$. However, we hypothesize that it is the amount of power that participants recalled possessing in their stories, not simply how positive or negative the story was, that should predict participants' responses to the BIS/BAS Scales.

Therefore, we ran separate regressions[4] for responses to the BAS Scale and responses to the BIS Scale, each with three simultaneous predictors: participant power in story, positivity of story, and negativity of story. Because BAS strength and BIS strength scores were somewhat correlated ($r(96) = .19$, $p = .06$), we included BIS strength as an additional predictor in the BAS analysis, and BAS strength as an additional predictor in the BIS analysis. BIS strength was a significant predictor of BAS strength, $\beta = .33$, $t(63) = 2.90$, $p = .005$. More relevant to our hypotheses, participant power was significantly and positively related to BAS strength, $\beta = .50$, $t(63) = 3.01$, $p = .004$. Positivity and negativity of the story were both unrelated to BAS strength, ps > .76.

BAS strength was a significant predictor of BIS strength, $\beta = .36$, $t(63) = 2.90$, $p = .005$. More relevant to our hypotheses, participant power was also related to BIS strength, $\beta = –.44$, $t(63) = –2.49$, $p = .02$. Positivity and negativity of the story were both unrelated to BIS strength, ps > .19. In short, these separate regression analyses complement the previous analyses reported above with priming condition as the

4. We also regressed the relative BAS strength measure (BAS score – BIS score) on the same three predictors. Participant power was significantly and positively related to relative BAS strength, $\beta = .38$, $t(62) = 2.16$, $p = .03$. Positivity and negativity of the story were both unrelated to relative BAS strength, ps > .39.

independent variable. Participant power was a positive predictor of BAS strength and a negative predictor of BIS strength. Here the effects of power on the BIS were statistically significant. The alternative explanation that priming general positivity or negativity can account for our results did not find any support. Rather, activating the concept of power itself increased the activation of the BAS and decreased the activation of the BIS.

Potential Mediators. Initial positive and negative affect scores were subtracted from scores collected immediately after the priming task. Positive scores indicate that the given affect increased after the priming task, and negative scores indicate that it decreased after the priming task. Priming condition tended to affect negative affect, $F(2, 95) = 2.64$, $p = .08$, $\eta_p^2 = .05$, but did not affect positive affect, $F < 1$. Whereas control ($M = –0.09$, $SD = 0.33$) and HPP participants ($M = –0.09$, $SD = 0.25$) showed a decrease in negative affect after the priming task, the level of negative affect for LPP participants ($M = 0.06$, $SD = 0.32$) slightly increased. That is, the change in negative affect was higher for LPP participants than both control, $p = .05$, and HPP participants, $p = .05$, who did not differ, $p = .95$.[5] However, neither positive nor negative affect was correlated with BAS or BIS strength, ps > .17.

To further ensure that our results were not driven by changes in affect, the original 2 (Scale: BAS vs. BIS) × 3 (Priming Condition: low power vs. control vs. high power) mixed–model ANOVA was run again twice, once with positive affect as a covariate, once with negative affect as a covariate. In both cases, the critical Scale × Priming Condition interaction remained significant, ps < .03.

As predicted by the approach/inhibition theory of power, priming participants with high power led to relatively greater BAS than BIS strength, as compared to priming participants with low power or not priming participants at all. High–power priming increased BAS strength but did not affect BIS strength. These effects were not mediated by mood.

In line with recent research (Anderson & Galinsky, 2006; Galinsky et al., 2003), these results suggest that priming high power activates the approach system more than priming low power activates the avoidance system. Additionally, these effects appear to be distinct: Priming high power activated the BAS but priming low power did not inhibit the BAS. Lacking power is not merely the opposite of having power (Keltner et al., 2003; Moskowitz, 2004).

This experiment provides consistent evidence that the concept of power is linked to the BAS. We were concerned that perhaps our effects were partially driven by the valence of the stories, rather than just by their power–related content. Indeed, the high–power stories were more positive than the low–power stories. This is not surprising, as control is a core social motive critical to psychological functioning (Skinner, 1996). However, when we also included the stories' positivity and negativity as predictors, only the amount of power participants expressed in their stories was related to their responses to the BAS and the BIS Scales. So far it appears that power's relation to the BAS and the BIS cannot be explained by simple positivity or negativity. That is, it is not that having power makes people feel good, and lacking power makes people feel bad, and these changes in affect change the activation of

5. Only the high–power prime significantly altered participants' level of negative affect. That is, the change score for negative affect was significantly different from 0 for HPP participants, $t(33) = 2.02$, $p = .05$, but not for control participants, $t(29) = 1.54$, $p = .13$, or LPP participants, $t(33) = 1.03$, $p = .31$.

the approach and avoidance systems. Instead, activating a sense of having power directly affects the approach system.

However, one critique of this first experiment could be that participants consciously used the specific event they recalled for the priming task as a basis for their responses to the BIS/BAS Scales. For example, a low–power–primed participant may have written about a time in her life when she was a waitress at a restaurant, subject to the demands of annoying customers and incompetent supervisors. Her writing may have overtly described several circumstances when she was timid and avoidant. Then, when she responded to the BIS/BAS Scale, those examples of her own avoidant behavior were most accessible and salient and thus were used as a basis for her answers.

Such a critique does not argue against our primary hypotheses about the relation between high power and the approach system, and low power and the avoidance system. In fact, this critique agrees with one of our major points, that having power generally involves approach behavior and lacking power involves avoidance behavior. However, our goal, like that of other researchers in the domain of social cognition and power (e.g., Galinsky et al., 2003), is to demonstrate something more fundamental, that the concept of power is linked to basic approach– and avoidance–related tendencies, even when these tendencies do not have anything overtly to do with power. Thus, in the remaining research, we took care to ensure that our manipulation of power did not overlap conceptually with our dependent measures.

EXPERIMENT 2

The next two experiments focus on the observable behavioral consequences of this power and approach/avoidance link. In Experiment 2, participants engaged in simulated approach and avoidance behavior. They responded to stimuli on a screen by moving a stick figure toward or away from each stimulus (De Houwer et al., 2001; Moors & De Houwer, 2001). We expected that participants primed with high power would be faster to move the stick figure toward stimuli than participants primed with low power, and that the reverse would be true when participants had to move the stick figure away from stimuli. On the results of Experiment 1, we also predicted that control participants would tend to resemble LPP participants. Here power and powerlessness were primed semantically via a scrambled sentences task (e.g., Smith & Trope, 2006). In this way, we manipulated power more subtly than in Experiment 1, reducing the possibility of semantic overlap between our independent and dependent measures.

Additionally, we used a different measure of affect in this experiment. In Experiment 1, we used the PANAS, which distinguishes only between positive and negative affect. However, orthogonal to the issue of valence, affect also has a motivational component (e.g., Higgins, 1997). That is, emotions may be distinguished by whether they are appetitive/approach–related, reflecting a focus on achievement and gains (e.g., happiness, discouragement), or aversive/avoidance–related, reflecting a focus on security and losses (e.g., relaxation, nervousness). Thus, in Experiment 2 we used a more sensitive test of affect that tapped into these two dimensions, valence and motivational direction, orthogonally. Past research using subtle manipulations of the approach and avoidance systems (e.g., Friedman & Förster, 2000, 2002, 2005) has found that these systems can be activated

without altering any type of affect, even the motivational direction of affect. That is, activating the approach and avoidance systems does not necessarily imply changing an individual's level of approach–related or avoidance–related affect. Thus, we still expected the effects of power on approach and avoidance to occur without changes in affect, even when using this more sensitive affect measure.

METHOD

Participants. Ninety–four native Dutch undergraduate students from a Dutch university participated for course credit or 2. Five participants were dropped: two for not following instructions, two for making excessive errors (more than 20% of responses, which was more than 3 standard deviations above the mean), and one for being excessively slow (response times more than 3 standard deviations above the mean). This left 89 participants (66 females) for the analyses. Average age was 21.2 years (SD = 2.7).

Procedure. This experiment was described as a series of unrelated tasks. Participants first completed a scrambled sentences priming task (Smith & Trope, 2006) consisting of 17 items. For each item, five words were listed, and participants were told to use four of the words to make a grammatically correct sentence. For the high–power prime, 9 of the 17 sets of words contained a word related to having power (i.e., *authority*, *captain*, *commands*, *controls*, *dominates*, *executive*, *independent*, *influenced*, *privileged*). For the low–power prime, those same 9 sets contained a word related to lacking power (i.e., *complied*, *dependent*, *janitor*, *obey*, *passive*, *servant*, *submits*, *subordinate*, *yield*). For the control prime, all 17 sets contained only power–irrelevant words. Immediately afterwards, they answered 12 mood questions. On 9–point scales (0 = *not at all*, 8 = *very much*) they indicated how happy, content, joyful, sad, disappointed, depressed, calm, relieved, relaxed, nervous, worried, and tense they felt. The mood questions were presented in random order.

A modified lexical decision task followed (De Houwer et al., 2001; Moors & De Houwer, 2001). Participants responded to a series of letter strings by moving a stick figure either toward or away from each letter string to indicate whether it was a real word or not. Participants did one of two versions of this task: Either they moved the figure toward words and away from nonwords, or they moved the figure away from words and toward nonwords.

In each trial, a stick figure first appeared, centered either in the top half or bottom half of the screen (determined randomly on each trial). A letter string appeared in the center of the screen 750 ms after the onset of the stick figure. The string remained on the screen until the participant pressed either the up arrow key (to move the stick figure up) or the down arrow key (to move the stick figure down), both on the right side of the keyboard. Participants' response times were calculated from the onset of the word to their key press. With this key press, the figure moved in the indicated direction until it reached either the center or the edge of the screen. Then the word and figure were erased, and the next trial began 2,000 ms later. Participants were told to keep their index fingers on the up and down arrow keys and to respond as quickly and as accurately as possible. After the instructions for a particular block, participants first completed 10 practice trials with feedback, then 48 real trials (half real words, half nonwords). The 24 words used in the task (listed in the Appendix) were medium in frequency and neutral in valence (M = 5.03 on a 9–point scale), based on data from a pilot study with 35 undergraduate students.

Next participants rated on 9–point scales (0 = *not at all*, 8 = *very much*) how much

TABLE 2. Response Latencies for Approaching Versus Avoiding Stimuli by Condition, Experiment 2

Condition	Approach	Avoidance
Low Power	944 (278)	926 (179)
Control	963 (398)	942 (253)
High Power	795 (231)	867 (179)

Note. Response latencies are reported in milliseconds. Standard deviations are in parentheses.

they enjoyed doing the lexical decision task, how difficult it was, how motivated they were to do well on it, how much effort they put into it, and how well they thought they actually did on it. Finally, they were probed for suspicion and debriefed. None of the participants saw a pattern in the words used in the scrambled sentences task. They also did not think the experiment was about power, and all participants reported being unaware of any influence of the priming task on their lexical decision task performance.

RESULTS AND DISCUSSION

Lexical Decision Data. First, response times for incorrect responses were deleted (6.51% of trials). Then all reaction times below 250 ms or more than 3 standard deviations above an individual participant's mean were eliminated (1.63% of remaining trials). Priming conditions did not differ in percentage of incorrect responses. To correct for skewness, a log transformation was used. Although analyses were performed on the transformed data, the raw latencies will be used for discussion and presentation. The pattern of results is identical when raw latencies are analyzed.

It was hypothesized that participants who were primed with high power would be faster to approach stimuli and slower to avoid stimuli than participants primed with low power. Preliminary analyses indicated that instruction set (whether a participant had to approach words and avoid nonwords vs. approach nonwords and avoid words) did not moderate our results, Fs < 1, so this factor was not analyzed further. A 2 (Movement: approach [moving figure toward letter string] vs. avoid [moving figure away from letter string]) × 3 (Priming Condition: low power vs. control vs. high power) mixed–model ANOVA was run on transformed response times, with the last factor between subjects. Participants were faster to approach stimuli (M = 735 ms) than to avoid them (M = 885 ms), $F(1, 86) = 7.45$, $p = .008$, $\eta_p^2 = .08$. The main effect of priming condition was not significant, $F(2, 86) = 1.98$, $p = .14$, $\eta_p^2 = .04$, but the Movement × Priming Condition interaction was significant, $F(2, 86) = 4.08$, $p = .02$, $\eta_p^2 = .09$. The means are reported in Table 2. As predicted, HPP participants were faster to approach stimuli than either LPP participants, $p = .04$, or control participants, $p = .06$, with the latter two groups not differing, $p = .94$. However, HPP, control, and LPP participants did not differ in their speed to avoid stimuli, ps > .24.

To further explore this interaction, participants' speed to approach stimuli was subtracted from their speed to avoid stimuli to obtain a relative measure of approach versus avoidance. HPP participants' relative speed to approach versus avoid stimuli was faster than both LPP participants, $p = .01$, and control participants, $p = .03$. LPP and control participants did not differ from each other, $p = .82$.

Potential Mediators. Four composite indices of affect were calculated to differentiate between positive versus negative affect and approach–related versus avoid-

ance–related affect. Responses to *happy*, *content*, *joyful*, *calm*, *relieved*, and *relaxed* were averaged to measure positive affect, and responses to *sad*, *disappointed*, *depressed*, *nervous*, *worried*, and *tense* were averaged for negative affect. Approach–related affect was calculated by averaging responses to *happy*, *content*, and *joyful* with (reverse–scored) *sad*, *disappointed*, and *depressed*, and avoidance–related affect was calculated by averaging responses to *calm*, *relieved*, and *relaxed* with (reverse–scored) *nervous*, *worried*, and *tense*. Priming condition did not affect any of these affect indices when they were analyzed separately, Fs < 1.1.

Additionally, the emotions were broken down into four separate types of affect: positive approach (*happy*, *content*, *joyful)*, negative approach (*sad*, *disappointed*, *depressed*), positive avoidance (*calm*, *relieved*, *relaxed*), and negative avoidance (*nervous*, *worried*, *tense*). Responses were then analyzed in a 2 (Motivational Direction: approach vs. avoidance) × 2 (Valence: positive vs. negative) × 3 (Priming Condition: low power vs. control vs. high power) mixed–model ANOVA. The only significant effect involving priming condition was an uninterpretable and theoretically irrelevant main effect of priming condition, $F(2, 86) = 3.31$, $p = .04$, $\eta_p^2 = .07$. Participants in the control condition ($M = 3.41$) gave higher ratings on the affect items in general, meaning that they felt the emotions more, than both LPP participants ($M = 3.11$), $p = .07$, and HPP participants ($M = 2.99$), $p = .01$. All other effects involving priming condition were nonsignificant, ps > .19.[6]

Priming also did not affect responses to questions about the lexical decision task, ps > .21.

In Experiment 2, participants primed with high power were faster to approach stimuli than participants primed with low power and control participants. This experiment demonstrates a direct link between power and approach behavior. It also provides further evidence that the effects of power are asymmetrical: HPP participants were faster to approach stimuli than both control and LPP participants, but the latter two did not differ, and none of the conditions differed in how fast they were to avoid stimuli. Neither mood nor evaluations of either task mediated these behavioral effects.

It is also important to note that these effects of power cannot be explained by a general tendency for HPP participants to be quicker to act than LPP or control participants (Galinsky et al., 2003). The main effect of priming condition was not significant: Participants primed with high power were not faster overall at the task than the other participants. We did not find that high power simply led to faster action. Instead, HPP participants were only faster to act when that action involved approaching a stimulus.

EXPERIMENT 3

At their most basic level, approach and avoidance involve physical distance. When an animal is confronted by a stimulus, the first, critical decision is whether to increase or

6. Some other effects that did not involve priming condition were also significant. A main effect of valence indicated that participants generally felt more positive ($M = 4.80$) than negative affect ($M = 1.54$), $F(1, 86) = 249.27$, $p < .001$, $\eta_p^2 = .74$. There was also a significant Motivational Direction × Valence interaction, $F(1, 86) = 9.06$, $p = .003$, $?_p^2 = .10$. Participants felt similar amounts of positive approach–related ($M = 4.90$) and positive avoidance–related affect ($M = 4.68$), $p = .13$, but they felt more negative avoidance–related affect ($M = 1.73$) than negative approach–related affect ($M = 1.32$), $p < .001$.

decrease the distance between itself and that stimulus. In the final experiment, we return to these basics. After priming, participants had to decide where to sit in relation to a fictitious other student. As in past research (e.g., Holland, Roeder, van Baaren, Brandt, & Hannover, 2004), we took the distance between the participant and this "student" as a measure of approach versus avoidance behavior. Because the student was never actually present in the room (Macrae, Bodenhausen, Milne, & Jetten, 1994), and was never assigned a particular identity by the experimenter, participants had no idea whether this person was a helpful, benign, or even threatening element. We predicted that participants primed with high power would sit closer to the student than participants primed with low power. Again a control condition was included in which participants completed a power–neutral version of the priming task.

METHOD

Participants. Eighty–one undergraduate students from a large U.S. university participated for course credit or $7. At the end of the experiment, the experimenter asked participants whether they had noticed the items on the desk and to whom they thought these items belonged. Nine participants were dropped because they either did not notice the backpack and jacket on the desk, or they thought those materials belonged to the experimenter.[7] Overall, data from 72 participants (60 females) were used in the analyses. Average age was 20.3 years (SD = 2.6).

Procedure. Participants took part one at a time. When a participant arrived, the experimenter brought him or her into a small room with a desk and explained that the study was about writing styles and decision-making.

The participant was handed an envelope containing the priming writing task from Experiment 1. The experimenter left the room while the participant wrote. After 4 minutes, the experimenter returned and told the participant that the room was being shared with other experimenters, so the remaining questionnaires would be completed in another room. En route to the next room, the experimenter casually commented that since the rooms were being shared, there might be another student in the next room, working on a different experiment.

The new room contained a row of six desks against one wall. A backpack leaned against the desk at one end of the row, and a jacket was draped across the back of the chair, giving the appearance of someone sitting there. The backpack and jacket were placed on the desk furthest from the door for some participants, and on the desk closest to the door for the other participants. The experimenter invited the participant to take a seat. Once the participant was seated, the experimenter handed him or her a packet of questionnaires. First was the PANAS, followed by various filler questionnaires.

While the participant completed these measures, the experimenter recorded where the participant sat. Finally, participants were probed for suspicion, asked whether they had noticed the backpack and jacket, and debriefed. No participant thought the experiment was about the effects of power (most simply repeated the

7. In this experiment, the critical measure was how far away from an unknown person the participant would sit. If participants did not notice that another person appeared to be sitting at one of the desks, or if participants thought the experimenter (a familiar, known person) was sitting at that desk, this measure could not be taken.

cover story about writing styles), and all participants reported being unaware of any influence of the priming task on their behavior.

RESULTS AND DISCUSSION

Manipulation Check. The priming writing was coded as in Experiment 1. Due to the strict time limit for the writing task, three participants' writing was too short to be coded and thus is not included in this analysis. The reliability for power ratings was high ($\alpha = .91$). HPP participants ($M = 4.94$, $SD = 1.15$) were judged to have had more power in the situation they described than LPP participants ($M = 1.50$, $SD = 1.24$), $F(1, 47) = 101.20$, $p < .001$, $\eta_p^2 = .68$.

Seating Distance. Because five desks were available, participants were assigned a seating number from 1 to 5, with higher numbers reflecting increasing distance from the "student." Preliminary analyses revealed that the location of the "other student's" desk (desk nearest to door vs. desk furthest from door) did not modify the critical effect: the Location × Priming Condition interaction was nonsignificant, $F < 1$, so the Location factor was dropped from further analyses. Priming condition indeed tended to affect seating distance, $F(2, 69) = 2.39$, $p < .10$, $\eta_p^2 = .06$. HPP participants ($M = 2.89$, $SD = 1.01$) sat significantly closer to the "student" than did LPP participants ($M = 3.48$, $SD = 1.08$), $p = .03$. Control participants fell in between ($M = 3.15$, $SD = 0.74$) and did not differ from HPP participants, $p = .37$, or LPP participants, $p = .26$.

As with Experiment 1, we wanted to be certain that our effects were driven by power, not by the valence of the story. Thus, the same two judges who coded the low–power and high–power stories for power also rated separately how positive ($\alpha = .86$) and negative ($\alpha = .81$) each low–power and high–power story was, using 7–point scales (0 = *not positive/negative at all*, 6 = *extremely positive/negative*). Stories written by HPP participants ($M = 3.10$, $SD = 1.40$) were rated as more positive than stories written by LPP participants ($M = 1.11$, $SD = 1.09$), $F(1, 47) = 30.21$, $p < .001$, $\eta_p^2 = .39$. Stories written by HPP participants ($M = 2.29$, $SD = 1.59$) were also rated as less negative than stories written by LPP participants ($M = 4.20$, $SD = 1.25$), $F(1, 64) = 21.41$, $p < .001$, $\eta_p^2 = .31$. However, we hypothesize that it is the amount of power that participants recalled possessing in their stories, not simply how positive or negative the story was, that should predict how close participants sat to the "other student." Therefore, we regressed the seat in which a participant sat onto three simultaneous predictors: participant power in story, positivity of story, and negativity of story. Participant power was significantly and negatively related to where participants sat, $\beta = -.41$, $t(45) = 2.16$, $p = .04$. Positivity and negativity of the story were both unrelated to where participants sat, ps > .68. Again there was no support for the alternative explanation that priming general positivity or negativity can account for our results. Rather, activating the concept of power itself made participants show more approach behavior. The more power participants had in the story they wrote, the closer they sat to the "other student."

Potential Mediators. Priming condition did not affect reported positive or negative affect, Fs < 1.

Again participants primed with high power demonstrated more approach–related behavior than low–power–primed participants. They sat closer to a fictitious student. In this situation, the object they were approaching was ambiguous (the student), but the heightened activation of the approach system triggered by power priming led them to approach this object nonetheless. As in Experiment 2, this result cannot be ex-

plained by power leading to greater action in general. Because we varied whether the "other student's" desk was at the near or far end of the row, sitting closer to the desk sometimes meant walking further, but sometimes sitting closer to the desk meant walking less. If high power simply led to more action, then HPP participants should have sat closer to the "other student's" desk when it was at the far end, and further away from the desk when it was at the near end. However, the location of the desk did not moderate our effects. Instead, we found that being primed with high power generally made participants sit closer to this "other student."

Our results could also not be explained by activation of general positivity or negativity. As in Experiment 1, when the positivity and negativity of participants' stories was taken into account, the amount of power participants described in their stories was still uniquely related to seating distance. Based on the combined results of Experiments 1 and 3, we are confident that relation between power and approach/avoidance cannot be explained by activating general positivity or negativity. This makes sense because the approach system is not simply a positivity system, nor is the avoidance system a negativity system. That is, motivational direction is distinct from affective valence, as shown by careful research on frontal cortical asymmetries and the BAS/BIS (e.g., Carver, 2004; Harmon–Jones & Allen, 1998; Hewig et al., 2004).

GENERAL DISCUSSION

In a series of three experiments, priming participants with high power activated the approach system and thus led to more approach–related behavior than priming participants with low power. In most cases, the control condition (i.e., where participants were primed with neither power nor powerlessness) resembled the LPP condition.

The first experiment demonstrated a link between power and the BAS. Participants primed with high power showed greater relative BAS strength than participants primed with low power or control participants. The last two experiments demonstrated differential tendencies to approach and avoid stimuli for people primed with different levels of power. Those primed with high power were faster to approach stimuli in a lexical decision task than those primed with low power or control participants. HPP participants also sat closer to a fictitious student. In all experiments, these effects were not mediated by mood or evaluations of the tasks. They were also not explainable by the positivity or negativity of the priming materials. Finally, these results could not be explained by high power leading to a general facilitation of behavior or action. Instead, we found that high power facilitated only approach–related behavior, and not avoidance–related behavior.

Across these experiments, high and low power had different effects on approach and avoidance regardless of whether the two systems were pitted against each other (Exp. 3) or measured separately (Exp. 1 and 2). These effects were also consistent across two different priming manipulations of power, and across three different operationalizations of approach and avoidance.

Is it true both that power facilitates approach and that powerlessness facilitates avoidance, or is the effect one–sided instead (Moskowitz, 2004)? Across the present experiments, we found much more evidence for power leading to approach than for powerlessness leading to avoidance. Participants primed with high power generally differed from the control condition, but participants primed with low power

did not. However, in Experiment 3 we did not find evidence for this asymmetry. Here participants in the control condition did not differ from either LPP participants or HPP participants. We believe that this result is due to a restriction of range of possible responses: Participants did not consider it appropriate to sit right next to the "student." Out of 72 participants, only one student (who was primed with high power) sat in that first desk.

These asymmetrical findings are in harmony with previous conceptual analyses of power as a situational feature signaling that the conditions are ripe for attaining one's important goals (Bargh & Raymond, 1995; Chen et al., 2001), analyses that emphasized the energizing qualities of the possession of power over the inhibitory qualities of lacking power. They are also in line with other recent work on power and higher–order approach and avoidance effects, which has found effects of having power but not of lacking power (e.g., Anderson & Galinsky, 2006; Galinsky et al., 2003). Power appears to transform those who possess it, rather than those who lack it.

Before the metamorphic effects of lacking power are completely ruled out, however, some alternative explanations must also be considered. First, can our control condition really be considered "power–neutral"? Being in an experiment itself may make people feel powerless. In fact, a few of our LPP participants described participating in our experiment when asked to write about a time when someone else had control over them. Here is an excerpt from one of them:

> I hope this isn't the "wrong" answer, but ... right now springs to mind. (Is that the answer that most students put down? Did I just "psych" out the experiment? Ohhh.) Actually, you basically have complete control over me right now. I have no idea what you're looking for, because it could be virtually anything. Thus, I have no idea how to act or what to hide first. In an indirect way, this controls my grade for Intro to Psych, and if I want to go into Psych as a major, this course is very important. So you have a lot of control.

In this way our control condition may have served as a mild form of low–power priming and thus obscured the effects of our actual low–power–prime condition.

A second possible problem is whether our low–power and high–power primes were equally effective. As previously mentioned, people generally have a need for control, so they may be resistant to powerlessness. When people believe they should have power but feel that they do not, they may resist this lack of power and even compensate for it. For example, parents should generally expect to have power over their children. When parents do not feel they have power over their children, they assert power even more in an attempt to repair their status (e.g., Bugental & Happaney, 2000; Bugental & Lin, 2001). Similarly, when participants were placed in a subordinate role but they desired a dominant one, they actually behaved as dominantly, and were perceived as such, as participants actually assigned to a dominant role (Schmid Mast & Hall, 2003, 2004). In a similar fashion, participants may have resisted our low–power primes (see also Smith & Trope, 2006). To explore this possibility, future research should include measures of individuals' willingness to be in superordinate and subordinate roles, including their need for power.

Another area to explore in future research is what moderators may attenuate, or even reverse, the relation between power and the approach and avoidance systems. As mentioned in the Introduction, one prime candidate is responsibility. Power sometimes brings with it a sense of responsibility to others (Chen et al., 2001;

Overbeck & Park, 2001). This sense of responsibility should increase the sense of constraint that a powerholder feels and thus lead to reduced approach–related behavior on the part of the powerholder. Anderson and Galinsky (2006) found initial evidence for the moderating effects of responsibility in their research on power and risk preferences. In their fourth experiment, participants who thought more about the responsibilities that went along with their power were less likely to engage in risky behavior (i.e., unprotected sex). Thus, framing power in terms of responsibility rather than control should attenuate the effect of having power on approach–related behavior.

It is important to note that the research evidence to date suggests that many individuals do not spontaneously consider the responsibility (or lack thereof) that accompanies having or lacking power. For example, the moderating effect of responsibility found by Anderson and Galinsky (2006) was not as strong as the main effect of power on risk preferences. In a separate line of research by the first author (Smith & Ellemers, 2006), participants were asked to write about a time in their life when either they had or did not have power. Power was framed either in terms of control (i.e., when they had control over someone vs. someone had control over them) or responsibility (i.e., when they were responsible for someone vs. someone was responsible for them). After some filler tasks, participants were reminded of the essay they had previously written (by reminding them of the title they had given the essay). Then they were asked to rate how much control they had had in that situation (relative to the other person) and how much responsibility they had had in that situation (relative to the other person). Whether participants wrote about control versus responsibility made no difference in their responses to the control question: Those who wrote about having power, regardless of whether they wrote about it in terms of control or responsibility, thought they had had more control in that situation than those who wrote about lacking power. However, framing mattered when participants had to indicate how much responsibility they had had. HPP participants rated themselves as having had more responsibility, and LPP participants rated themselves as having had much less responsibility, when the writing task was framed in terms of responsibility rather than control. In short, at least in certain cultures, power may be primarily conceptualized[8] in terms of control (Mondillon et al., 2005), and responsibility must be emphasized or made overt in order for it to moderate power's main effects.

Another intriguing moderator is the stability of a person's power position (Keltner et al., 2003). If the power hierarchy is seen as mutable, those with power should feel increased threat because their elevated position is in jeopardy. Because they have to focus on maintaining their gains, they should show less approach–related behavior. Meanwhile, those without power should feel greater freedom to pursue their desires because there is less chance of being restrained by those above, not to mention a possibility of gaining more power. With this increased freedom and decreased potential for punishment, those without power should show less

8. As with any priming research, one may ask whether what we have activated via priming in our experiments is a "real sense" of power or a stereotype of power. Although our experiments by themselves cannot address this question, past research that has incorporated both overt power manipulations and power priming has found similar effects for the two manipulations (e.g., Anderson & Berdahl, 2002; Anderson & Galinsky, 2006; Galinsky et al., 2003). Even if priming activates a stereotype, this stereotype seems to be relatively accurate, perhaps because it is informed in part by personal experience.

avoidance–related behavior. Of course, hierarchies are generally marked by stability (Sidanius & Pratto, 1999), so this moderator may only sometimes be relevant in real life.

The link we have demonstrated here between power and basic behavioral systems may help to explain what we currently know about power's effects. For example, recent research has shown that power leads people to process information more abstractly (Smith & Trope, 2006). Individuals primed with power categorize more inclusively, identify objects and actions at a higher level, and are superior at detecting patterns and relationships. These results were originally interpreted in terms of construal level theory (Trope & Liberman, 2003), with power representing a form of psychological distance. However, recent research by Förster and colleagues (Förster, Friedman, Özelsel, & Denzler, 2006; Friedman & Förster, 2000) has shown that the mere enactment of approach versus avoidance behavior leads to similar changes in the breadth and abstractness of information processing. In this light, power's link to abstract information processing can be seen as further evidence of power's effect on the approach and avoidance systems.

Having power also makes people more efficacious: They not only do more but are also more successful at achieving their goals (e.g., Keltner et al., 2003). Clearly, possessing power gives people greater access to resources (concrete, abstract, and interpersonal) which can then be used in the service of goal pursuit. But the link between power and the BAS suggests that power provides more microlevel resources as well. Greater BAS strength has been associated with better performance on executive function tasks and greater processing efficiency (J. R. Gray & Braver, 2002; J. R. Gray & Burgess, 2004; Lieberman & Rosenthal, 2001). That is, heightened BAS activation has been linked to enhanced cognitive control. Thus, power may not only give people more external aids in goal pursuit, but it may also allow people to more efficiently use their internal, cognitive resources as well.

APPENDIX

WORDS USED IN EXPERIMENT 2 (ENGLISH TRANSLATIONS IN PARENTHESES)

adem (breath), *bord* (board), *deur* (door), *draad* (thread), *fles* (bottle), *gordijn* (curtain), *grond* (ground), *hemd* (shirt), *kamer* (room), *klok* (clock), *koord* (cord), *lucht* (air), *minuut* (minute), *muur* (wall), *nummer* (number), *paard* (horse), *raam* (window), *schip* (ship), *sleutel* (key), *stoel* (chair), *streep* (line), *trein* (train), *voet* (foot), *wagen* (wagon)

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