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Research Article

Illusory Control

A Generative Force Behind Power's Far-Reaching Effects

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ABSTRACT—Three experiments demonstrated that the experience of power leads to an illusion of personal control. Regardless of whether power was experientially primed (Experiments 1 and 3) or manipulated through roles (manager vs. subordinate; Experiment 2), it led to perceived control over outcomes that were beyond the reach of the power holder. Furthermore, this illusory control mediated the influence of power on several self-enhancement and approach-related outcomes reported in the power literature, including optimism (Experiment 2), self-esteem (Experiment 3), and action orientation (Experiment 3). These results demonstrate the theoretical importance of perceived control as a generative cause of and driving force behind many of power's far-reaching effects. A fourth experiment ruled out an alternative explanation: that positive mood, rather than illusory control, is at the root of power's effects. The discussion considers implications for existing and future research on the psychology of power, perceived control, and positive illusions.

Having a sense of control over the future has long been considered a fundamental motive and a highly adaptive trait for humans. It is well established that an absence of perceived control leads to depression, pessimism, and withdrawal from challenging situations (e.g., Abramson, Seligman, & Teasdale, 1978; Peterson & Seligman, 1984; Price, Choi, & Vinokur, 2002) and even drives individuals to see nonexistent patterns in their environment (Whitson & Galinsky, 2008). In contrast, possessing a general sense of control leads to self-esteem, optimism, and agency (e.g., Bandura, 1989; Scheier, Carver, & Bridges, 1994; Skinner, 1995). Given the importance of these effects on health and well-being, it is not surprising that scholars have invested a great deal of effort in identifying the determinants of perceived control (for reviews, see Heckhausen & Schulz, 1995; Skinner, 1995).

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A diverse set of findings has suggested that feelings of control often stem from the possession of power, although this relationship has not been assessed directly. People with high socioeconomic status (Lachman & Weaver, 1998), members of dominant groups (Guinote, Brown, & Fiske, 2006), and members of cultures that endorse the values of power and individual agency (Heine, Lehman, Markus, & Kitayama, 1999; Markus & Kitayama, 1991) are all more likely than others to believe they can control the future. These same people—the wealthy, the educated, the numerical majority, the individualistic—also tend to display more optimism, self-esteem, and action in pursuit of their goals (e.g., Heine et al., 1999; Mirowsky & Ross, 2000; Twenge & Campbell, 2002). Taken in concert, these findings suggest that social power might expand one's sense of personal control, even when the control is illusory, and, furthermore, that this elevated sense of control might produce the self-enhancement and action-orientation tendencies often displayed by power holders. In the present research, we tested these ideas explicitly.

ILLUSORY CONTROL AND THE EFFECTS OF POWER

Because power emerges from asymmetric control over valuable resources (e.g., Emerson, 1962; Keltner, Gruenfeld, & Anderson, 2003; Magee & Galinsky, 2008), it is reasonable to assume that power holders experience control over the people and outcomes that are connected to their power. However, the psychological properties of power might also cause power holders to overestimate their actual control, leading to an illusory sense of control. Illusory control is the belief that one has the ability to influence outcomes that are beyond one's reach (e.g., perceived influence over outcomes that are largely determined by chance; see Langer, 1975; Taylor & Brown, 1988; Thompson, Armstrong, & Thomas, 1998). Prior research has shown that illusory control is caused by the presence of cues related to having control (Langer, 1975; Thompson et al., 1998). We suggest that the possession of power serves as one such cue, such that possessing and experiencing power increase a sense of control over events,

even when these events are based in chance or disconnected from the source and context of the power.

In addition to testing the effects of power on illusory control, we examined the idea that illusory control mediates several effects associated with power. Keltner et al. (2003) provided a wealth of circumstantial evidence that power activates the behavioral approach system, whereas powerlessness activates the behavioral inhibition system. Empirical tests have lent support to this theory: Power has been shown to produce approach-related effects even in domains that are untouched by the actor's power (e.g., Anderson & Galinsky, 2006; Galinsky, Gruenfeld, & Magee, 2003; Galinsky, Magee, Inesi, & Gruenfeld, 2006; Gruenfeld, Inesi, Magee, & Galinsky, 2008). In addition, the powerful express more confidence in their own thoughts than the powerless do: They generate ideas and express attitudes that are less influenced by the opinions of other people (Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). In the experiments reported here, we assessed whether these agency-facilitating effects of power are driven by perceptions of control. Given that perceived control is intimately related to optimism, self-esteem, and agency (Scheier et al., 1994; Skinner, 1995), we posit that a number of the self-enhancement and approach-related effects of power, including optimism (Anderson & Galinsky, 2006), self-esteem (Wojciszke & Struzynska-Kujalowicz, 2007), and action orientation (Galinsky et al., 2003; Magee, Galinsky, & Gruenfeld, 2007), are driven by an inflated sense of control that is activated by power.

We conducted three experiments to assess two main hypotheses: (a) that power leads to illusory control, and (b) that this power-induced illusory control mediates the effects of power on optimism, self-esteem, and action orientation. In addition, we conducted a fourth experiment to test the alternative hypothesis that positive mood, rather than illusory control, mediates these effects of power. We predicted that power would increase illusory control, even over events disconnected from the source or province of power, and that this increase in illusory control would account for a number of power's far-reaching effects.

EXPERIMENT 1

In Experiment 1, power was manipulated by asking participants to recall an experience with high power, an experience with low power, or an event unrelated to power (Galinsky et al., 2003). Illusory control was measured using the classic die-rolling paradigm (Langer, 1975), in which participants are offered a reward for predicting the outcome of a roll and are given a choice of rolling the die themselves or having another person roll the die for them. Choosing to roll the die reflects an illusory sense of control; it indicates that the actor believes he or she can personally influence the outcome of the random roll and, thus, increase the odds of obtaining the reward. We predicted that participants in the high-power condition would be more likely than those in the other two conditions to choose to roll the die.

Method

Participants were 38 undergraduate students who were recruited from a large Midwestern university and paid \$5 (demographic data were not available). They were randomly assigned to one of three conditions: high-power ($n = 13$), low-power ($n = 12$), and baseline ($n = 13$). Those in the high-power condition were instructed to recall and write about an incident in which they had power over other people, whereas those in the low-power condition were instructed to write about an incident in which someone had power over them (see Galinsky et al., 2003). Participants in the baseline condition were instructed to write about their last experience at the supermarket (see Gruenfeld et al., 2008).

After completing the priming task, participants were instructed that they could win an additional \$5 if they correctly predicted the outcome of a single roll of a six-sided die. They were then given a choice between rolling the die themselves or having the experimenter roll the die for them. This choice served as our measure of illusory control.

Results and Discussion

As predicted, illusory control differed by condition, $\chi^2(2, N = 38) = 6.54, p = .04, p_{\text{rep}} = .89$. High-power participants were more likely to choose to roll the die (100%) than were low-power participants (58%), $\chi^2(1, N = 25) = 6.77, p = .01, p_{\text{rep}} = .95$, or baseline participants (69%), $\chi^2(1, N = 26) = 6.54, p = .04, p_{\text{rep}} = .89$. The low-power and baseline participants did not differ on this measure, $\chi^2(1, N = 25) = 0.32, p > .57$.

Recalling an experience of power led each and every participant in the high-power condition to roll the die themselves. In contrast, approximately two thirds or less of participants in the low-power and baseline conditions chose to roll the die themselves. These results offer strong support for our prediction that power leads to illusory control.

EXPERIMENT 2

In Experiment 2, we tested whether illusory control mediates the established relationship between power and optimism (Anderson & Galinsky, 2006). We manipulated power by instructing participants that they would be matched with a partner and play the role of either a manager or a worker. Before completing any tasks associated with their roles, participants were asked to complete a separate study that was unrelated to their power role and assessed perceived control and optimism.

Method

Participants were 30 undergraduate students (16 women, 14 men; mean age = 19.83 years) who were recruited from a large Western university and paid \$7. Upon arrival at the lab, they were told that they would be taking part in several unrelated studies.

First, participants were randomly assigned to a role in which they had power (manager; $n = 15$) or did not have power (worker; $n = 15$). They were told that in an upcoming task, the managers would be supervising and making decisions that would affect their workers.

Next, participants were informed that, before proceeding with the manager-worker study, they would complete a separate, unrelated study that involved reading a vignette and answering a few questions about a marketing agency. As the materials were distributed, the experimenter instructed the participants: "Before you move on to the manager-worker task, please read and complete this vignette; it's for an unrelated study." This explicit set of instructions served to ensure that the high- and low-power assignments would not be applied to the vignette task.

In the vignette, participants were asked to imagine working for a marketing agency. No position in the company was specified. After reading background information about the agency, participants rated the likelihood that they could control its future outcomes, using a scale from 1 (*not at all likely*) to 7 (*very likely*). Using the same scale, they responded to four items measuring their optimism about their organization's performance (e.g., "How likely is your agency to increase its profitability in the next two years?"; $\alpha = .80$).

Results and Discussion

As predicted, high-power participants reported greater perceived control ($M = 5.33$, $SD = 1.11$) than did low-power participants ($M = 2.53$, $SD = 1.19$), $t(28) = 6.67$, $p < .001$, $p_{rep} = .99$, even though the power roles were unrelated to the marketing context and this measure of control. Similarly, high-power participants were more optimistic about the marketing company's future performance ($M = 4.72$, $SD = 0.92$) than were low-power participants ($M = 4.02$, $SD = 0.79$), $t(28) = 2.29$, $p = .03$, $p_{rep} = .91$.

Also as predicted, perceived control fully mediated the relationship between power and optimism (Sobel test: $z = 2.25$, $p = .02$, $p_{rep} = .92$; see Fig. 1). In contrast, optimism did not mediate the relationship between power and control; when the

analysis controlled for the effects of optimism, the relationship between power and perceived control remained highly significant, $\beta = .67$, $t(29) = 5.66$, $p < .001$, $p_{rep} = .99$. It should be noted, though, that controlling for optimism led to a slight, but statistically insignificant, reduction of the power-control relationship (Sobel test: $z = 1.64$, $p = .10$).

These findings offer further support for our hypothesis that power leads to illusory control and, furthermore, suggest that the previously established link between power and optimism (Anderson & Galinsky, 2006) is mediated by this illusory sense of control.

EXPERIMENT 3

We next tested whether illusory control mediates power's effects on self-esteem (Wojciszke & Struzynska-Kujalowicz, 2007) and action orientation (Galinsky et al., 2003). We used a context for action—voting in a national election—that is particularly important given that democracies are based on active citizen involvement and are largely shaped by voter mobilization and turnout. Power was manipulated with the same experiential prime used in Experiment 1. We compared the high-power condition with a baseline condition in order to demonstrate that the effects observed in Study 2 were driven by the experience of power and not by powerlessness. After the power manipulation, participants completed measures of sense of control, self-esteem, and action orientation. We predicted that those imbued with a sense of power would demonstrate illusory control, which would mediate power-induced increases in self-esteem and action orientation.

Method

Participants were 79 adults from the United States (58 women, 21 men; mean age = 33.86 years) who were recruited through an on-line database maintained by a large Western university. They were compensated with a \$5 on-line gift certificate.

Participants were randomly assigned to either a high-power ($n = 40$) or a baseline ($n = 39$) condition. As in Experiment 1, power was primed by having participants write about an experience in which they possessed power. Participants assigned to the baseline condition wrote about events from their previous day. Next, participants completed the measures of self-esteem, action orientation, and perceived control. Self-esteem was measured with the 10-item Rosenberg (1965) Self-Esteem Scale (e.g., "On the whole, I am satisfied with myself"), which uses a 4-point response scale anchored by 1 (*strongly disagree*) and 4 (*strongly agree*; $\alpha = .91$). Action orientation was measured by asking participants to indicate whether they planned to vote (coded as "1") or not vote (coded as "0") in an upcoming national midterm election. Perceived control was measured in two ways. First, participants completed a measure asking about their ability to control five hard-to-control outcomes (e.g., "To what

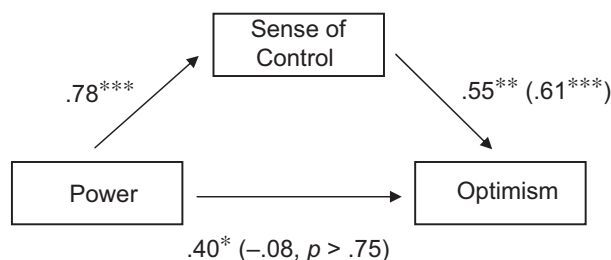


Fig. 1. Results from Experiment 2: mediation analysis predicting optimism. The numbers alongside the arrows are standardized regression coefficients; coefficients in parentheses are the values obtained when both power and sense of control were included as predictors of optimism. Asterisks indicate values significantly different from zero, * $p < .05$, ** $p < .01$, *** $p < .001$.

extent are you able to have some control over what happens in the economy?"); items were rated on a 7-point scale ranging from 1 (*very little control*) to 7 (*a great deal of control*; $\alpha = .81$). Second, participants indicated whether or not they believed they could influence the outcome of the national election by voting. They stated either that they were able (coded as "1") or unable (coded as "0") to influence the election results.

Results and Discussion

Perceived Control

As predicted, results for the five-item measure of perceived control indicated that high-power participants perceived higher levels of control ($M = 3.49$, $SD = 1.12$) than baseline participants ($M = 2.86$, $SD = 1.12$), $t(78) = 2.49$, $p = .02$, $p_{\text{rep}} = .93$. Power also affected the dichotomous measure of control; the percentage of participants who indicated they could influence the election was greater in the high-power condition (70%) than in the baseline condition (42%), $\chi^2(1, N = 79) = 6.17$, $p = .01$, $p_{\text{rep}} = .95$.

Self-Esteem

High-power participants reported higher self-esteem ($M = 3.17$, $SD = 0.55$) than baseline participants ($M = 2.89$, $SD = 0.51$), $t(77) = 2.25$, $p = .03$, $p_{\text{rep}} = .91$. As predicted, sense of control (the five-item measure) fully mediated the relationship between power and self-esteem (Sobel test: $z = 1.93$, $p = .05$, $p_{\text{rep}} = .88$; see Fig. 2).

Action Orientation

More participants in the high-power condition than in the baseline condition indicated they were planning to vote (78% vs. 56%), $\chi^2(1, N = 79) = 3.98$, $p = .04$, $p_{\text{rep}} = .89$. Thus, participants in the high-power condition were more action oriented. In addition, perceived control over the election outcome (the dichotomous measure) fully mediated the relationship between power and voting intentions (Sobel test: $z = 2.17$, $p = .03$, $p_{\text{rep}} = .91$; see Fig. 3).

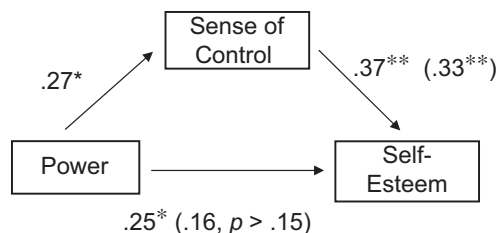


Fig. 2. Results from Experiment 3: mediation analysis predicting self-esteem. The numbers alongside the arrows are standardized regression coefficients; coefficients in parentheses are the values obtained when both power and sense of control were included as predictors of self-esteem. Asterisks indicate values significantly different from zero, * $p < .05$, ** $p < .01$.

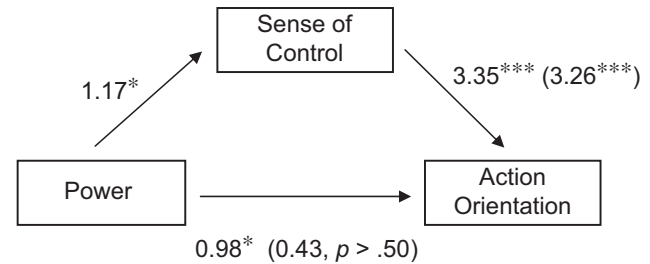


Fig. 3. Results from Experiment 3: mediation analysis predicting action orientation. For this analysis, dichotomous measures of both sense of control and action orientation were used. The numbers alongside the arrows are unstandardized logistic regression coefficients; coefficients in parentheses are the values obtained when both power and sense of control were included as predictors of action orientation. Asterisks indicate values significantly different from zero, * $p < .05$, *** $p < .001$.

Alternative Mediation Tests

We also examined the possibility that self-esteem and action orientation might be stronger mediators than sense of control. The relationship between self-esteem and action orientation failed to reach significance, $\beta = .19$, $t(77) = 1.68$, $p > .09$. Furthermore, including self-esteem as a predictor did not reduce the effects of power on action orientation (Sobel test: $z = 0.88$, $p > .37$), and including action orientation as a predictor did not reduce the effects of power on self-esteem (Sobel test: $z = 0.53$, $p > .59$). Next, we tested self-esteem as a potential mediator of the relationship between power and illusory control. Although including self-esteem as a predictor reduced the relationship between power and sense of control to nonsignificance, $\beta = .20$, $t(77) = 1.83$, $p = .07$, this reduction did not reach standard levels of significance (Sobel test: $z = 1.79$, $p = .07$). Finally, we tested action orientation as a potential mediator of the relationship between power and illusory control. Although including voting intentions as a predictor reduced the relationship between power and the dichotomous measure of sense of control to nonsignificance, $b = 0.91$, $SE = 0.61$, $\chi^2(1, N = 79) = 2.28$, $p = .13$, $p_{\text{rep}} = .79$, this reduction did not reach standard levels of significance (Sobel test: $z = 1.80$, $p = .07$).

Taken together, these results suggest that illusory control mediates both the relationship between power and self-esteem and the relationship between power and action. Self-esteem did not mediate the effects of power on action orientation, and action orientation did not mediate the effects of power on self-esteem. Although there was some evidence that self-esteem and action orientation mediated the relationship between power and illusory control, these effects were only marginally significant. Overall, these data are most consistent with our hypothesized model: Power leads to illusory control, which, in turn, mediates the influence of power on behavioral approach and self-esteem.

EXPERIMENT 4

The final experiment explored whether positive mood is a driving mechanism behind power's effects. Indeed, some studies

have demonstrated a link between power and positive emotions (Anderson & Berdahl, 2002; Berdahl & Martorana, 2006; Keltner et al., 2003). However, several other studies have shown null effects of power on mood (e.g., Anderson & Berdahl, 2002, Study 2; Galinsky et al., 2003; Smith & Trope, 2006; Weick & Guinote, 2008). Nonetheless, we sought to examine positive mood as a potential mediator of power's effects on optimism and self-esteem. This study also allowed us to test whether optimism and self-esteem mediated the effect of power on each other. We randomly assigned participants to either a powerful position or an unspecified position in a negotiation and then measured optimism, self-esteem, and mood.

Method

Participants were 43 adults from the United States (28 women, 15 men; mean age = 31.47 years) who were recruited through an on-line database maintained by a large Western university. They were compensated with a \$5 on-line gift certificate.

Participants were told that they would be role-playing in an on-line negotiation between an employer and a job applicant regarding the applicant's salary and vacation package. They were randomly assigned to either the high-power ($n = 23$) or the baseline ($n = 20$) condition. The employer had a clear advantage in the negotiation, and participants in the high-power condition were assigned to the role of the employer. Those in the baseline condition were told they would be either the employer or the applicant, but no role was specified. After reading a description of the negotiation, participants were asked to complete some background questionnaires (which contained the optimism, self-esteem, and mood measures) while they waited to be connected via computer to their negotiation partner (in reality, the negotiation never took place).

We measured participants' optimism by asking them to indicate the number of points they felt they would accumulate in the negotiation; the response scale ranged from 1 (*a low number of points*) to 7 (*a high number of points*). Participants' current self-esteem was measured with eight items, which were rated on a 7-point scale anchored by 1 (*not at all*) and 7 (*extremely*; $\alpha = .81$). The items on this measure included "I feel good about myself" and "I feel inferior to others at this moment" (reverse-scored). Mood was assessed by participants' ratings of the degree to which they felt four positive emotions at the moment (i.e., "happy," "excited," "enthusiastic," and "proud"); ratings were again made on a 7-point scale anchored by 1 (*not at all*) and 7 (*extremely*; $\alpha = .89$).

Results and Discussion

As in Experiment 2, high-power participants were more optimistic ($M = 5.30$, $SD = 1.02$) than baseline participants ($M = 4.30$, $SD = 0.80$), $t(41) = 3.55$, $p = .001$, $p_{\text{rep}} = .99$. As in Experiment 3, high-power participants displayed higher self-esteem ($M = 5.18$, $SD = 0.82$) than baseline participants

($M = 4.69$, $SD = 0.72$), $t(41) = 2.11$, $p = .04$, $p_{\text{rep}} = .89$. However, high-power participants did not experience more positive mood ($M = 4.25$, $SD = 1.40$) than baseline participants ($M = 4.79$, $SD = 1.14$), $t(41) = 1.40$, $p = .17$. Moreover, when we controlled for mood, the link between power and optimism remained significant, $\beta = .47$, $t(42) = 3.31$, $p = .002$, $p_{\text{rep}} = .98$, and was not reduced (Sobel test: $z = 0.57$, $p = .56$). Thus, mood did not mediate the link between power and optimism. Although the association between power and self-esteem was reduced to nonsignificance when we controlled for mood, $\beta = .25$, $t(42) = 1.72$, $p = .09$, a Sobel test indicated that this reduction was not significant ($z = 1.14$, $p = .25$). Thus, mood did not mediate power's effects on self-esteem. Additionally, we examined whether self-esteem mediated power's effects on optimism and whether optimism mediated power's effects on self-esteem; neither was the case (Sobel tests: $z = 0.54$, $p = .59$, and $z = 0.53$, $p = .59$, respectively).

These results indicate that the effects of power, and the mediational role of illusory control, are not the result of positive mood. Rather, as the results of Experiments 2 and 3 demonstrated, illusory control seems to be the driving force behind the effect of power on self-enhancement and approach-related tendencies.

GENERAL DISCUSSION

Across three experiments, and using two different instantiations of power, we found that power led to perceived control over outcomes that were uncontrollable or unrelated to the power. Power predicted perceived control over a chance event (Experiment 1), over outcomes in domains that were unrelated to the source of power (Experiment 2), and over future outcomes that were virtually impossible for any one individual to control (e.g., performance of the national economy, national election results; Experiment 3). Furthermore, this inflated sense of control mediated power's positive effects on optimism (Experiment 2), self-esteem (Experiment 3), and action orientation (Experiment 3). A final experiment ruled out positive mood as an alternate explanation for the observed effects of power (Experiment 4).

Contributions

The present findings offer a number of important contributions. First, they advance research on the determinants of perceived control by revealing that illusory perceptions of control over outcomes are determined not only by chronic personality traits and cultural differences, but also by dynamic, situation-based power asymmetries. Second, they contribute to the power literature by indicating that perceptions of control in response to power are illusory, as well as realistic, and that an illusory sense of control is a basic response to the psychological experience of power. Finally, and perhaps most important, these experiments provide evidence for why power leads to approach tendencies

and self-enhancement: Illusory control appears to be a generative cause of and driving force behind a number of effects previously found to be associated with power, including action, optimism, and self-esteem.

Our experiments also help to shed light on why the powerful often seem to exhibit hubristic overconfidence (Hayward & Hambrick, 1997). By producing an illusion of personal control, power may cause people to lose touch with reality in ways that lead to overconfident decision making (see, e.g., Fenton-O’Creevy, Nicholson, Soane, & Willman, 2003). But we hasten to add that being fully grounded in—and constrained by—reality is not always desirable. As noted earlier, illusory control is often adaptive and, in some cases, can enhance performance (e.g., Langer, 1983; Taylor & Brown, 1988).

Unresolved Questions and Future Directions

As is always the case in research, these experiments have not answered all questions. One lingering question concerns whether the relationship between power and illusory control extends to real-world power and organizationally embedded decisions. It is possible that the behavior of our participants, especially the undergraduates in Experiments 1 and 2, would not generalize to samples with more power experience. For example, executives may learn to curb their illusions as they gain experience within a particular decision domain or as they move up the corporate ladder. Alternatively, it could be that the illusion of control actually intensifies as people become increasingly powerful and successful. Given these conflicting possibilities, it is important for future research to examine whether and how the effects of an individual’s experience with power change over an extended period of time and whether the effects we observed vary depending on the type of people’s prior experience with power. Similarly, it would be fruitful to examine other potential moderators of the relationship between power and illusory control, such as perceived legitimacy of the power (Lammers, Galinsky, Gordijn, & Otten, 2008), cultural context (Zhong, Galinsky, Magee, & Maddux, 2008), and perceived personal competence in the domain of power (Fast & Chen, 2008).

Coda: The Yin and Yang of Positive Illusions Among the Powerful

The observed causal link between power and illusory control has implications for how power, once attained, is maintained or lost (e.g., Sivanathan, Pillutla, & Murnighan, 2008). Positive illusions can lead power holders to achieve the unimaginable by embarking on low-probability journeys and persisting when other individuals would give up (Taylor & Brown, 1988). Such unbridled confidence can lead the powerful, in a self-fulfilling manner, to make the seemingly impossible possible. But the relationship between power and illusory control might also contribute directly to losses in power. For example, financial investments driven by illusory control often lead to large and

damaging losses. Thus, an illusion of personal control might be one of the ways in which power often leads to its own demise (Winter & Stewart, 1983).

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