How Leaders Self-Regulate Their Task Performance: Evidence That Power Promotes Diligence, Depletion, and Disdain

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When leaders perform solitary tasks, do they self-regulate to maximize their effort, or do they reduce effort and conserve their resources? Our model suggests that power motivates self-regulation toward effective performance—unless the task is perceived as unworthy of leaders. Our 1st studies showed that power improves self-regulation and performance, even when resources for self-regulation are low (ego depletion). Additional studies showed that leaders sometimes disdain tasks they deem unworthy, by withholding effort (and therefore performing poorly). Ironically, during ego depletion, leaders skip the appraisal and, therefore, work hard regardless of task suitability, so that depleted leaders sometimes outperform nondepleted ones. Our final studies replicated these patterns with different tasks and even with simple manipulation of framing and perception of the same task (Experiment 5). Experiment 4 also showed that the continued high exertion of leaders when depleted takes a heavy toll, resulting in larger impairments later. The judicious expenditure of self-control resources among powerful people may help them prioritize their efforts to pursue their goals effectively.

Keywords: power, self-regulation, ego depletion, goal orientation, action orientation

In most work groups, leaders direct their subordinates to set aside their own individual goals and motives to work toward the common good (Van Vugt, 2006; Van Vugt, Hogan, & Kaiser, 2008). Task leadership is thus essentially interpersonal. Yet, leaders must often perform many tasks themselves, including solitary and even mundane chores. Some of these stem from the leadership role directly, whereas others may come in the course of ordinary life and bear no relation to the leadership role. Faced with demands for such performance, leaders may choose to exert themselves to high levels, or they may slack off or even refuse to perform. The decision is often consequential, insofar as the leader's psychological resources of time, energy, and attention are limited and precious. In the present research, we tested two hypotheses about how leaders would respond to such task demands and regulate their solitary performances.

Our first hypothesis was that assignment to a position of power or leadership would generally motivate the person to self-regulate effort so as to perform well. Simply occupying a leadership role would thus motivate people to exert energy at many tasks. Self-regulatory efforts would mostly lead to improvements in performance, even on solitary tasks with little apparent connection to the leader's exertion of power. However, this willingness to work hard would be tempered with a broad sense of awareness of limited resources. Hence, our second hypothesis predicted that leaders would show reluctance to exert themselves on tasks that they deemed inappropriate uses of their time and effort. We adopted the term *disdain* to refer to a leader's withdrawal of effort from performance of a task deemed unworthy of a leader's exertions and to the resultant poor performance on it.

Definitions

Power

Consistent with previous theories and researchers, we define power as the capacity to influence and control the outcomes of other people by rewarding or punishing them (e.g., French & Raven, 1959; Keltner, Gruenfeld, & Anderson, 2003; Thibaut

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& Kelley, 1959). Broader conceptions of power (e.g., van Dijke & Poppe, 2006) link it to a general striving for agency, which to us includes more than power but is highly congenial to our research. Our definition of power also focuses primarily on how power is manifested in relation to others (especially to subordinates), whereas other definitions focus on personal ability to act in an agentic manner for oneself (Overbeck & Park, 2001). For present purposes, leadership roles are understood as roles that have power over others. This blending of leadership and power fits with prior social psychological investigations examining power (e.g., Guinote, 2008; Vescio, Gervais, Snyder, & Hoover, 2005; Vescio, Snyder, & Butz, 2003; Weick & Guinote, 2008).

Self-Regulation

We use the terms self-regulation and self-control interchangeably to refer to altering one's own responses so as to bring them into line with standards for socially desirable thoughts, feelings, and behaviors (Baumeister, 1998; Carver & Scheier, 1981). Self-regulation involves overriding one response so as to make another possible. The present studies focused on the regulation of task performance, which often depends on marshaling or withholding effort, so as to work rapidly, carefully, and efficiently toward successful completion.

Work, Effort, and Self-Regulation

By definition, work groups have tasks to perform. The output of these groups depends on the abilities and efforts of the members. Within the limits set by the abilities of the group members, the quality of output will depend mainly on the effort because effort is to some degree controllable. Workers may be tempted by intrinsically pleasant diversions. Therefore, self-regulation is needed to maintain high effort on a work task.

Effort comes in part from motivation. Yet, even a person who is highly motivated by the appeal of, say, winning an Olympic medal will likely find it necessary to self-regulate to sustain the daily exertions of training. Self-regulation is typically needed when motivational conflicts arise, and self-regulation is typically used to resolve these conflicts in a particular direction, namely in favor of long-term, enlightened rationality and social desirability at the expense of short-term selfish indulgence in tempting pleasures. Working hard at an assigned task instead of slacking off takes such self-regulation.

Power Promotes Self-Regulation of Effort

What is the effect of having power or a leadership role on such self-regulation? One might suppose that leaders can get away with not working as hard as others because they are less vulnerable to being punished. However, multiple recent findings have suggested the opposite effect, namely that leaders feel an increase in obligation and motivation and therefore would be more likely than others to self-regulate, so as to perform their tasks at a high level.

First, a power or leadership role may increase motivation by making the person feel responsible to the group and its goals. For one thing, the high status associated with most leadership and power roles is gratifying and therefore may increase commitment to the group and its goals. Willer (2009) found that positive feelings and motivations toward the group increased among people who were accorded high status. As a result, they later showed more generous and altruistic behaviors, even making sacrifices for the good of the group. Altruistic sacrifices require self-regulation and dwindles when self-regulation is impaired (DeWall, Baumeister, Gailliot, & Maner, 2008), and so these results could be construed as suggesting that adopting a power role increases the tendency to self-regulate in support of the group's goals.

A related finding is that leaders feel individually identified and therefore more accountable than others. Low effort on group tasks often comes from social loafing (Latané, Williams, & Harkins, 1979), which comes in part from diffusion of responsibility, that is, the feeling that one is not accountable and that no one will know that one withheld effort. Leaders expect to be noticed and may even feel pressure to set a good example of hard work for the other group members. Some evidence that leaders are less prone than others to diffusion of responsibility was provided by Baumeister, Senders, Chesner, and Tice (1988), who showed that the so-called bystander effect did not obtain among group leaders.

Another reason to expect that power would promote self-regulation of performance is that power seems to stimulate executive function in general, and self-regulation is a significant portion of the self's executive function (Baumeister, 1998). In general, power is linked to broad strivings for agency (Overbeck & Park, 2001; van Dijke & Poppe, 2006). Smith, Jostmann, Galinksy, and van Dijk (2008) showed that low power impaired performance on some executive function measures, notably the Stroop task. Galinsky, Gruenfeld, and Magee (2003) showed that power manipulations (similar to the ones used in the current investigation) created a broad tendency toward initiative and active responses rather than passive responses, even on behaviors unrelated to the power role. Recalling an autobiographical experience of wielding power made people more likely to turn off an annoying fan in the laboratory, suggesting that power promotes initiative goal-directed behavior. In a similar vein, Guinote (2007a) showed that powerful participants performed better than others at controlling their attention on a variety of tasks. These findings suggest that power increases initiative and attentional control, regardless of whether such initiative and control are exerted within the context of one's powerful role. Instead, a sense of power activates the self's executive function, which then spills over into other activities that involve exerting effort.

Accumulating research evidence suggests that power increases goal-directed behavior and cognition (Galinsky et al., 2003; Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008; Guinote, 2007a, 2007b, 2007c; see also Smith & Bargh, 2008). Harnessing the executive function and its self-regulatory powers toward that end would be a consequence of this goal-directedness. For these reasons, our first hypothesis was that power would lead to heightened performance on many tasks, through motivated self-regulation of effort.

Disdaining Unsuitable Tasks

In the previous section, we proposed that the power holder's mindset may promote self-regulation to maximize effort on a broad variety of tasks. But surely not all tasks would qualify. Ultimately, many leaders face potential demands and opportunities for exertion that far exceed their capabilities and resources. Yet, to

resist exertion would go against the agentic readiness that was hypothesized in the previous section.

Thus, our second hypothesis was that power holders may be broadly willing to exert high effort on many tasks, but they would disdain some tasks as not worth the effort. That is, high-power people may view certain tasks as befitting a high-power person and would therefore want to engage in those tasks but not other tasks. This process is akin to the selective self-stereotyping effect in which people take on—and behave in line with—the positive aspects of their group's stereotype but deny the negative descriptors as personally relevant (Biernat, Vescio, & Green, 1996).

Determining which tasks to pursue and which to disdain might proceed by conducting a deliberate cost-benefit analysis, but that process would itself require considerable time, effort, and energy. A simpler solution would have the powerful person remain alert for tasks that seem especially wasteful of the leader's limited resources. High-power participants have quite flexible information processing skills (Vescio et al., 2003), which may foster performance of such thin-slice appraisals of situations. In particular, tasks that are associated with underlings might elicit a response that prompts the leader to question whether they are worth the effort. Although that appraisal would (again) itself require time and energy, it would only be conducted in the wake of an initial reaction that the task at hand seemed clearly inappropriate. Such a response would enable the leader to perform well at most tasks, while avoiding expending too much energy on the few unsuitable ones that come up.

This hypothesis paints a picture of high-power people as highly variable in their behavior. In fact, a general conclusion from empirical research is that powerful people's behavior is more variable than that of others (Galinsky et al., 2003; Guinote, Judd, & Brauer, 2002; Weick & Guinote, 2008). This variability comes about not because high-power people behave arbitrarily due to personal whim and fancy but rather because they are sensitively attuned to the situation (for a summary, see Guinote, 2007a). Thus, our theoretical model focuses on the relation between high power and self-regulation because that relation has the potential to explain highly variable behavior, namely when power holders will expend energy needed to self-regulate and when they will withdraw their effort, leading to poor performance (see Figure 1).

Moreover, it seems that high-power people become particularly attuned to the combination of their personal goals and situational affordances that may help achieve them. Guinote (2007b) found

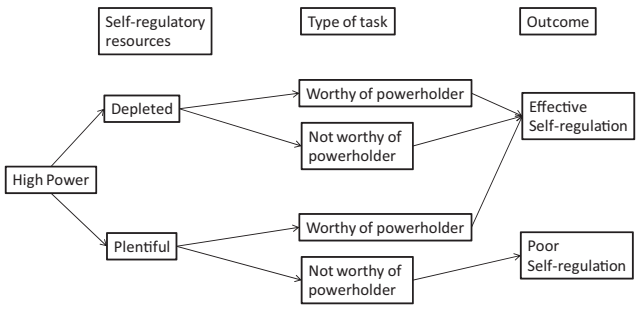

Figure 1. Proposed model illustrating the effects of high power on self-regulation as a function of available self-regulatory resources and whether a task is worthy or unworthy of a power holder's efforts.

that people in a high-power position were not uniformly approach-motivated in their behaviors vis-à-vis goal completion. Guinote (2007b) commented that instead,

> Powerful individuals . . . prioritize their focal goals and perform better in the various tasks involved in the pursuit of a goal, such as decision making during goal setting or seizing good opportunities to act in a goal-consistent manner." (p. 1077)

In line with this portrait of high-power people, we hypothesized that their self-regulatory behavior will vary as a function of circumstance, such that high-power people will seize on opportunities to pursue goals in line with a high-power position but may disengage from tasks seen as not in keeping with the leadership role (Biernat, Vescio, & Billings, 1999).

Limited and Depleted Resources

The reasoning thus far has relied on the assumption that leaders have limited amounts of time, energy, attention, and possibly other resources. Self-regulation theory has recently come to emphasize that self-regulation takes energy (see Baumeister, Vohs, & Tice, 2007, for a review). Hence, achieving maximum performance may take both energy for self-regulation and energy for performance.

The present investigation included conditions in which leaders confronted task demands when their own energy resources had already been depleted by prior, irrelevant acts of self-control. We entertained competing hypotheses about how power would interact with this state of ego depletion.

The simplest prediction would be that a leadership role would at least partly counteract the effects of depletion. Our core assumption is that assignment to a leadership role creates a broad motivational willingness to exert oneself, and this could cause leaders to use self-control to perform well even when already depleted.

If assignment to a leadership role motivates the person to exert effort then effort should be high regardless of whether resources were already depleted. Muraven and Slessareva (2003) showed that people can perform well despite ego depletion if they are sufficiently motivated. The implication is that once some resources have been expended, the person begins to conserve the remaining resources in case important demands arise (see Muraven, Shmueli, & Burkley, 2006). The responsibilities of leadership might constitute just such an important task demand, so that leaders would continue to exert effort past the point at which others might have begun to withdraw and conserve effort.

A contrary prediction was based on the argument that powerful people may disdain tasks that seem unworthy of a leader, but the very process of appraising a task and making a decision to withhold effort consumes self-regulatory resources (Vohs et al., 2008). When in a depleted state, power holders should respond in one of two ways. First, they may disdain more and more tasks as resources become depleted. Effectively, this would require revising one's criteria for deciding whether a task is appropriate, so that a larger proportion of tasks falls in the latitude of disdain. Depleted leaders might disdain some tasks that they would normally tackle with gusto.

Alternatively, the depleted leader might skimp on the task appraisal process. Rather than putting energy into appraising whether task demands are suitable, the depleted leader might simply go ahead and perform them, at least up to a point. The idea

that depletion could curtail the appraisal process furnished the basis for our last and most counterintuitive prediction: Depleted leaders might actually perform better than nondepleted leaders on some tasks. Specifically, when leaders are confronted with tasks that could be appraised as unsuitable for leaders, nondepleted leaders should disdain them and withdraw effort, whereas depleted leaders would skip the appraisal and therefore put high effort into them.

The possibility that depleted leaders might outperform nondepleted leaders constitutes a radical break with the bulk of previous research, which has consistently linked ego depletion to performance decrements (e.g., Baumeister et al., 2007). However, one recent finding lends plausibility to our hypothesis. Apfelbaum and Sommers (2009) showed that White ego-depleted students were better liked by Black interaction partners than were nondepleted ones. The implication is that many White people are nervous about offending Blacks, and so they constantly monitor and check their behaviors during such interactions. This constant monitoring decreases how much their Black interaction partners like them. When depleted, the White persons suspend this constant self-appraisal process, allowing them to behave in a more likable manner. Although in a different context, the Apfelbaum and Sommers (2009) findings suggest that one early effect of ego depletion is to reduce self-appraisal. In the present investigation, ego depletion might offset tendencies for power holders to disdain exertion, leading them to exert energy on tasks that they would normally disdain.

Present Research

Thus, we propose that power may have positive and (occasionally) negative effects on self-regulation of performance. When powerful people see opportunities to pursue their goals and carry out their responsibilities, they should self-regulate their effort so as to perform better than other people. In contrast, when leaders perceive task demands as unsuited to someone of their status, they should withdraw effort and perform relatively poorly. The decision as to which way to go depends on an appraisal and self-regulation process that may itself deteriorate under ego depletion.

In Study 1A and 1B, we examined the simple effect of power on self-regulation of performance. In Study 2, we extended that by examining the effects of power interacting with ego depletion (i.e., diminished capacity for self-regulation). Study 3 introduced the problem of disdaining effort on a task (arithmetic problems) that leaders might regard as unsuitable to them. Studies 4 and 5 replicated and extended the findings to provide a comprehensive understanding of when leaders self-regulate by maximizing effort on task and when they instead withdraw effort.

Experiments 1A and 1B

Experiments 1A and 1B provided initial tests of the hypothesis that power would motivate self-regulation and thereby promote task performance. Experiment 1A manipulated power by placing participants into a structural position within a hierarchy (Anderson & Berdahl, 2002; Galinsky et al., 2003) High-power participants were placed in the role of manager, whereas low-power participants were placed in the role of subordinate. Control participants were instructed that they would be informed of their role in the group task later in the experiment. In Experiment 1B, we manipulated power by having participants complete a vivid recall task in which they wrote an essay describing a time in which they were high in power or low in power, or they wrote about their previous day's activities. Having participants write a personal narrative describing a time when they experienced high power or low power had the advantage of relying on participants' own experiences with power. Prior work has suggested that these different manipulations often produce similar results (Galinsky et al., 2003).

Experiments 1A and 1B also used different dependent measures of self-regulatory performance. In Experiment 1A, the measure was performance on a dichotic listening task. Dichotic listening is a standard measure of attention control because it requires the participant to ignore information heard in one ear and to focus instead on monitoring and categorizing information presented to the other ear. Power holders are often faced with the responsibility of completing many different tasks at the same time. The capacity to attend to goal-congruent information—and to ignore goal-irrelevant information—is therefore likely a form of self-regulation that is important to the actual work of many leaders.

In Experiment 1B, we used an anagram task as a dependent measure. Accurate responding to solvable anagrams has been used in several previous investigations as a measure of self-regulatory performance (Baumeister, Bratslavsky, Muraven, & Tice, 1998). If one understands self-regulation as overriding, organizing, and coordinating responses (Schmeichel, Vohs, & Baumeister, 2003) then it is particularly relevant to anagram solving, which requires a person to try out various combinations and then break them down and start anew with different combinations. Self-regulation is also needed to manage one's time, especially when one may be having difficulty with a particular problem and must therefore decide whether to continue striving on the assumption that one has already ruled out some possibilities or to give up and move on to a new, possibly easier one. If power promotes self-regulation then participants in the high-power condition (manager in Experiment 1A, high-power recall condition in Experiment 1B) should perform better than do low-power and control participants.

Intuition and formal theory (e.g., Keltner et al., 2003) propose that high power could stimulate positive emotions, and there is some evidence that positive emotional states can improve self-regulation (Tice, Baumeister, Shmueli, & Muraven, 2007). Therefore, an alternative theoretical prediction could hold that power manipulations would influence self-regulation by boosting positive emotional states. To test that hypothesis, we included measures of emotion in both Experiments 1A and 1B.

Method

Participants. Forty-nine undergraduates (32 women, 17 men) participated in Experiment 1A, and 134 undergraduates (98 women, 36 men) participated in Experiment 1B.

Materials and procedure. Participants in Experiment 1A arrived at the laboratory individually for a study ostensibly concerning how people work together. The experimenter instructed participants that the experiment would involve completing a series of questionnaires and a task with a same-sex participant. In reality, participants completed the entire experiment alone. Participants first completed a questionnaire labeled, "Leadership Questionnaire," which included questions related to their tendency to strive

for status, to their dominance over others, and to the extent to which they competed with others for positions of authority. Participants were informed that their responses on the leadership questionnaire would be used to assign them to a role for the partner task later on in the experiment. In actuality, participants were randomly divided into one of three roles that connoted different levels of power: manager (high power), subordinate (low power), and general worker (control). This method for manipulating positions of power was adapted from Anderson and Berdahl (2002).

When participants had completed the leadership questionnaire, the experimenter left the room ostensibly to score the participant's leadership questionnaire. After 4 min, the experimenter returned and informed participants that they were assigned to the role of manager (high power) or subordinate (low power) or that they would learn of the role to which they were assigned later in the experiment (control). The experimenter described the role that the participant would have for the partner task and presented him or her with a box of Lego toys, from which a structure called a tanagram would be built.

Participants in the high-power condition were told that they would decide how to structure the process for building the tanagram, would provide an anonymous evaluation of the subordinate (the subordinate would not be allowed to evaluate the manager), and would decide how a $15 bonus would be divided between themselves and the subordinate. Low-power participants, in contrast, were informed that they would follow instructions from the manger in terms of how the Tanagram should be constructed, would have their performance evaluated by the manager (but would not be given the opportunity to evaluate the manager), and would have their share of bonus money determined by the manager. Participants in the control condition were told that they would build a structure called a tanagram using Lego toys with the other participant and would be informed of their role assignment later in the experiment. This manipulation of power fits our definition of power because high-power participants were given control over their subordinate's access to a monetary reward.

Participants in Experiment 1B arrived at a large classroom in groups of 20–30 for a study ostensibly concerning personality and performance. Participants first completed an imagination and thought-listing procedure to prime their sense of power. By random assignment, participants were assigned to one of three conditions: high power, low power, and control. Following procedures developed by Galinsky et al. (2003), high-power participants described a situation in which they had power over one or more people, low-power participants described a situation in which someone else had power over them, and control participants described a neutral situation (e.g., previous day's activities, such as the time at which they awoke, contents of each meal). Priming high-power participants in this way also conforms to our definition of power because these participants recalled a time when they had control over others.

To assess any possible mood effects of the power manipulation, participants in Experiments 1A and 1B then completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988). The BMIS is a 16-item self-report measure of current emotional state that contains items measuring mood valence (e.g., happy, content) and arousal (e.g., active, peppy). After completing the BMIS, participants completed the dependent measure of self-regulation.

In Experiment 1A, the experimenter explained that the other participant was finishing several questionnaires and was not ready to complete the tanagram task. Participants were asked to complete an unrelated listening task, which was ostensibly part of a pilot test, while they waited. The experimenter gave the participant a sheet of paper and explained that he or she should ignore the incoming information presented to his or her right ear and should write down each word spoken in his or her left ear that contained the letter *m* or the letter *p*. The content of the speech that was played in the right ear concerned a policy issue related to copyright; the recording played in the left ear consisted of a female voice speaking the 255 most popular words in the English language, of which 38 contained the letter *m* and 10 contained the letter *p*.

Participants in Experiment 1B were presented with 80 solvable anagrams and were given 8 min to complete as many anagrams as possible. After participants finished the self-regulation tasks, participants were debriefed and dismissed.

Results

Participant gender effects. Given the large and impressive literature on gender effects with respect to power in the interpersonal sphere (Vescio et al., 2005, 2003), we conducted a thorough analysis of gender as a moderator in our experiments. Descriptive statistics of all experiments separated by participant gender are found in Tables 1, 2, and 3. Although in previous work gender has been shown to divide participants in terms of their reactions to power (e.g., Vescio et al., 2005, 2003), in the current studies, we found no main effects or interactions involving gender, which is also in line with past work particularly focusing on power and self-regulation (Guinote, 2007b). Because the lack of main effects or interactions satisfies the homogeneity of variance assumption, all further analyses collapsed across participant gender.

Self-regulation performance. For both Experiments 1A and 1B, we conducted one-way analyses of variance (ANOVAs) in which self-regulatory performance (dichotic listening in Experiment 1A and anagrams in Experiment 1B) was compared among the high-power, low-power, and control conditions. In Experiment 1A, occupying a position of high power promoted effective dichotic listening performance. An ANOVA revealed significant variation among the three experimental groups, $F(2, 46) = 3.78$, $p = .03$, $\eta^2 = .08$. Planned comparisons demonstrated that high-power participants ($M = 41.89$, $SD = 2.22$) performed better on the dichotic listening task than did low-power participants ($M = 38.38$, $SD = 4.86$), $F(1, 46) = 6.66$, $p = .01$, $\eta^2 = .13$, and better than did control participants ($M = 39.07$, $SD = 4.51$), $F(1, 46) = 4.16$, $p < .05$, $\eta^2 = .08$. Low-power and control participants did not differ in their dichotic listening performance ($F < 1$, *ns*).

In Experiment 1B, we analyzed the number of anagrams completed correctly (providing an assessment of accuracy), the number of anagrams attempted (providing an assessment of speed), and the proportion of anagrams completed correctly by dividing the number of anagrams that participants completed correctly by the number of anagrams that participants attempted (providing an assessment of speed–accuracy tradeoff). For the number of anagrams completed correctly, ANOVA revealed significant variation among the high-power, low-power, and control conditions, $F(2, 131) = 3.50$, $p = .03$, $\eta^2 = .03$. Planned comparisons showed that

Table 1
Descriptive Statistics Regarding Power, Depletion, and Participant Gender: Experiments 1A–2

	High power		Low power		Control	
Experiment	*M*	*SD*	*M*	*SD*	*M*	*SD*
			Experiment 1A			
Dichotic listening: Correctly identified words	41.89	2.22	38.38	4.86	39.07	4.51
Men	42.14	1.57	37.25	3.86	39.33	3.39
Women	41.73	2.61	38.75	5.24	38.89	5.33
			Experiment 1B			
Anagrams: Correctly solved	25.72	13.45	20.89	8.97	20.25	9.23
Men	26.80	16.83	15.92	7.94	19.78	8.07
Women	25.26	11.97	22.75	8.73	20.39	9.66
Anagrams: Attempted	26.46	13.42	24.77	11.15	23.23	9.30
Men	27.80	16.60	20.42	13.73	22.89	8.51
Women	25.88	12.04	26.41	9.77	23.32	9.65
Anagrams: Proportion correct	.97	.08	.89	.16	.88	.18
Men	.95	.12	.90	.23	.86	.06
Women	.97	.06	.88	.17	.89	.20
			Experiment 2			
Dichotic listening: Correctly identified words						
Depletion	42.65	2.16	34.53	6.82	32.83	6.75
Men	43.29	1.38	39.00	4.00	31.33	7.15
Women	42.30	2.46	32.67	7.00	33.53	6.73
No depletion	41.59	4.03	38.74	6.13	38.10	5.69
Men	39.67	2.89	38.17	6.85	38.75	5.32
Women	42.00	4.21	39.00	6.04	37.94	5.92

high-power participants ($M = 25.72$, $SD = 13.45$) completed more anagrams correctly than did low-power participants ($M = 20.89$, $SD = 8.97$), $F(1, 131) = 4.58$, $p < .04$, $\eta^2 = .03$, and more than did control participants ($M = 20.25$, $SD = 9.23$), $F(1, 131) = 5.57$, $p = .02$, $\eta^2 = .04$. Low-power and control participants did not differ in terms of their anagram performance ($F < 1$, *ns*).

There was no significant variation among the three groups in terms of the number of anagrams attempted ($F < 1$, *ns*). This

Table 2
Descriptive Statistics Regarding Power, Depletion, and Participant Gender: Experiment 3

	High power		Control	
Experiment 3	*M*	*SD*	*M*	*SD*
Multiplication problems: Correctly solved				
Depletion	3.65	1.87	2.13	1.30
Men	3.00	1.63	2.67	0.82
Women	4.10	1.97	1.78	1.48
No depletion	2.27	2.12	3.15	1.77
Men	1.83	1.47	2.75	2.06
Women	2.56	2.51	3.33	1.73
Multiplication problems: Attempted				
Depletion	5.18	1.88	4.67	1.95
Men	5.00	2.00	5.33	1.51
Women	5.30	1.89	4.22	2.17
No depletion	5.27	2.74	5.31	1.55
Men	3.83	1.83	5.75	0.96
Women	6.22	2.91	5.11	1.76
Multiplication problems: Proportion correct				
Depletion	.69	.26	.43	.35
Men	.60	.28	.47	.33
Women	.76	.23	.39	.38
No depletion	.39	.32	.68	.21
Men	.42	.39	.71	.32
Women	.37	.31	.65	.14

Table 3
Descriptive Statistics Regarding Power, Depletion, Type of Task, Task Framing and Participant Gender: Experiments 4 and 5

	High power		Low power		Control	
Experiment	*M*	*SD*	*M*	*SD*	*M*	*SD*
			Experiment 4			
Operation game (number of errors)						
Depletion	0.68	0.61			−0.55	1.09
Men	0.49	0.51			−0.27	0.81
Women	0.73	0.65			−0.66	1.18
No depletion	0.37	0.72			−0.03	0.93
Men	0.51	0.70			−0.39	1.44
Women	0.28	0.76			0.13	0.59
Multiplication problems (proportion correct)						
Depletion	0.51	0.81			−0.63	1.09
Men	0.44	0.92			−0.69	1.34
Women	0.54	0.78			−0.60	1.03
No depletion	−0.50	0.84			0.43	0.77
Men	−0.44	0.88			0.33	0.85
Women	−0.54	0.85			0.49	0.76
Dichotic listening: Correctly identified words						
Depletion	34.67	7.31			40.07	5.64
Men	35.92	5.53			38.62	7.39
Women	34.19	7.91			40.70	4.71
No depletion	39.23	4.81			41.21	3.23
Men	38.93	5.40			40.54	4.35
Women	39.40	4.56			41.54	2.55
			Experiment 5			
Persistence (in seconds)						
High power frame	580.63	363.40	424.06	263.96	443.00	169.78
Men	526.14	267.46	513.44	330.86	435.77	205.34
Women	599.70	395.78	393.12	236.33	448.87	141.40
Low power frame	310.24	181.66	590.59	380.69	405.54	169.98
Men	369.13	228.70	587.92	358.77	504.29	173.34
Women	284.08	156.96	592.24	402.35	356.17	150.69

finding suggests that the power manipulation had no influence on the speed with which participants completed the anagrams.

For proportion of anagrams completed correctly, ANOVA revealed significant variation among the three experimental groups, $F(2, 131) = 4.50$, $p = .01$, $\eta^2 = .03$. High-power participants completed a higher proportion of anagrams correctly ($M = .97$, $SD = .08$) than did low-power participants ($M = .87$, $SD = .19$), $F(1, 131) = 6.40$, $p = .01$, $\eta^2 = .05$, and more than did control participants ($M = .88$, $SD = .18$), $F(1, 131) = 6.50$, $p = .01$, $\eta^2 = .05$. Low-power participants did not differ from control participants in terms of the proportion of anagrams completed correctly ($F < 1$, *ns*). Thus, the proportion correct (error rate) data mimicked the findings on number correct.

Emotion. To test whether the differences in self-regulation were attributable to changes in emotion, we conducted two one-way ANOVAs for each experiment using the mood valence and arousal subscales of the BMIS (Mayer & Gaschke, 1988) as dependent measures. In these analyses for both Experiments 1A and 1B, we found no significant variation among the three conditions in terms of either mood valence (Fs < 1.04, ps $> .36$) or arousal (Fs < 1). These findings contradict the alternative hypothesis that the effects were due to changes in mood valence or arousal. These results are consistent with prior studies showing a lack of mood differences with these power manipulations (Galinsky et al., 2003; Smith & Trope, 2006).

Discussion

Experiments 1A and 1B provided initial evidence that power can promote effective self-regulation. In Experiment 1A, high-power participants, who were placed into a role in which they would evaluate and direct the actions of another participant, correctly identified more stimulus words on a dichotic listening task, compared with low-power and control participants. In Experiment 1B, participants who were primed with high power solved more anagrams correctly than did participants primed with low power and more than did those who reflected on yesterday's activities. Thus, self-regulatory performance was improved both by placing participants in a position of high power and by priming high power.

Experiment 2

Experiments 1A and 1B provided evidence that high power can promote effective performance on tasks requiring self-regulation. These measurements were taken under conditions in which participants' initial levels of self-regulation were not manipulated, and therefore, participants in all conditions (due to random assignment) ought to have had equivalent levels of self-control at the start of the study. Experiment 2 was designed to carry the test a step further and investigate the effects of power on self-regulation

under adverse conditions. As noted above, one factor that contributes to self-regulation impairments is depletion of self-regulatory strength (Baumeister et al., 2007). We hypothesized that power would counteract the deleterious effects of depleted strength on self-regulation performance.

There are both motivational and cognitive reasons to expect that putting people in power would counteract the negative effects of depletion. In terms of motivation, power has been shown to cause increases in action orientation (Galinsky et al., 2003). If power is associated with action orientation then putting people in power after their self-regulatory resources have been depleted could provide a motivational boost that would improve effective self-regulation on a subsequent task. Power has also been shown to influence cognition in a manner that could promote effective self-regulation after depletion. For example, Smith and Trope (2006) demonstrated that high-power people favored high-level construals, which promote successful self-regulation and can even counteract the effects of ego depletion (Fujita, Trope, Liberman, & Levin-Sagi, 2006). These findings suggest that power activates motivational and cognitive processes that have a positive influence on self-regulation. Power may therefore have cognitive and motivational effects that will enable even a depleted person to self-regulate successfully.

Self-regulatory depletion was manipulated by having participants watch a brief video clip under conditions designed either to deplete their self-regulatory strength or to leave their self-regulatory resources intact. We used a procedure adapted from Gilbert, Krull, and Pelham (1988), in which participants watched a video clip (without audio) of a woman being interviewed by an off-camera interviewer. While participants watched the interview, neutral words that were irrelevant to the interview were presented in the bottom corner of the screen for 10 s each. Participants in the depletion condition were instructed to ignore the words and to direct their attention to the woman being interviewed. Thus, they had to use their self-regulatory strength to control their attention. In contrast, participants in the no depletion condition were not given any specific viewing instructions.

Numerous studies have shown that controlling one's attention on this task depletes the self's executive function, resulting in later impairments on tasks that require self-control (e.g., Gailliot et al., 2007; Vohs & Schmeichel, 2003). We predicted that controlling one's attention by ignoring the words would deplete participants' self-regulatory strength and therefore impair self-regulation—but not among participants who experienced high power.

Method

Participants. One hundred twelve participants (81 women, 31 men) participated in exchange for partial course credit.

Materials and procedure. Participants arrived at the laboratory individually for an experiment ostensibly concerning attention and personality. First, participants were given the same power manipulation used in Experiment 1A . Participants completed the leadership questionnaire. While the experimenter was ostensibly scoring their questionnaire, participants were asked to watch a brief video. This task constituted the manipulation of self-regulatory depletion. Participants viewed a 6-min videotape (without audio) that depicted a woman being interviewed by an interviewer located off-camera. In addition to the women being interviewed, a series of common one-syllable words (e.g., tree) appeared at the bottom of the screen for 10 s each. The words were printed in black ink and were presented on a white background. By random assignment, half the participants were assigned to the depletion condition, and the other half were assigned to the no depletion condition. Participants in the depletion condition were instructed "not to read or look at any words that may appear on the screen." The experimenter reiterated the importance of not looking at the words presented on the bottom of the screen by instructing participants to redirect their gaze immediately if they caught themselves looking at the words instead of the woman's face. In contrast, participants in the no depletion condition were not given specific instructions for watching the video clip and were not given advance knowledge that there would be words at the bottom of the screen.

To determine whether the different video watching instructions caused changes in emotion, participants completed the BMIS after watching the video clip. Then, participants were assigned to a role of either manager (high power) or subordinate (low power), or they were told that their role would be assigned later in the experiment (control).

After participants received information regarding their role in the group task, participants completed the dichotic listening task used in Experiment 1A. When participants had finished the dichotic listening task, participants were debriefed and dismissed.

Results

Dichotic listening performance. The number of words correctly identified on the dichotic listening task was the main dependent measure. A 3 (power: high vs. low vs. control) × 2(depletion vs. no depletion) ANOVA revealed main effects of power, $F(2, 106) = 15.61$, $p < .001$, $\eta^2 = .13$, and depletion, $F(1, 106) = 7.26$, $p < .01$, $\eta^2 = .06$. The main effects were, as predicted, qualified by a Power × Depletion interaction, $F(2, 106) = 3.55$, $p = .06$, $\eta^2 = .03$ (see Figure 2). Placing participants into a position of power counteracted the deleterious effects of self-regulatory depletion. A one-way ANOVA focusing on the depletion condition revealed significant variation among the high-power, low-power, and control conditions, $F(2, 106) = 17.51$, $p <$

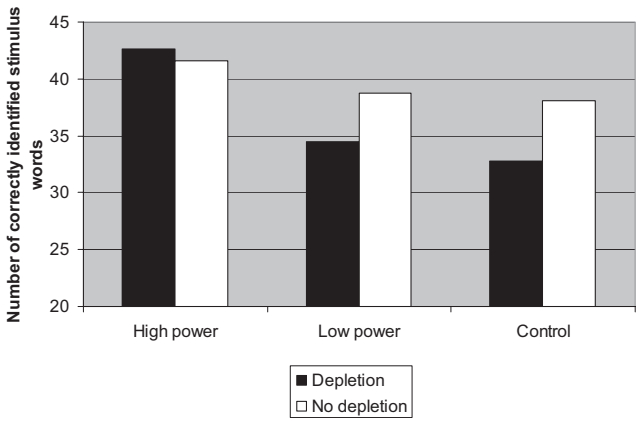

Figure 2. Interactive effect of power and depletion on self-regulation in Experiment 1A. Higher scores indicate better self-regulation.

.001, $\eta^2 = .14$. Planned comparisons demonstrated that high-power participants ($M = 42.65$, $SD = 2.16$) performed better on the dichotic listening task than did low-power participants ($M = 34.53$, $SD = 6.82$), $F(1, 106) = 20.16$, $p < .001$, $\eta^2 = .16$, and better than did control participants ($M = 32.83$, $SD = 6.75$), $F(1, 106) = 30.36$, $p < .001$, $\eta^2 = .22$. Low-power and control participants did not differ in their dichotic listening performance ($F < 1$, *ns*). Thus, experiencing high power eliminated the harmful consequences of self-regulatory depletion and led to better self-regulation than shown by low-power and control participants.

Depletion apparently had no effect on the performance of participants in the high-power condition. Those in the depletion condition ($M = 42.65$, $SD = 2.16$) did not differ in terms of their self-regulation performance from those in the no depletion condition ($M = 41.59$, $SD = 4.03$, $F < 1$, *ns*). Participants in the low-power condition, in contrast, suffered decrements in dichotic listening performance as a result of self-regulatory depletion ($M = 34.52$, $SD = 6.82$), compared with no depletion participants ($M = 38.74$, $SD = 6.13$), $F(1, 106) = 5.29$, $p = .02$, $\eta^2 = .05$. In addition, control participants showed the typical ego depletion effect, insofar as those in the depletion condition ($M = 32.83$, $SD = 6.75$) performed worse than did those in the no depletion condition ($M = 38.10$, $SD = 5.69$), $F(1, 106) = 8.94$, $p < .01$, $\eta^2 = .08$.

Emotion. The results of Experiments 1A and 1B showed that the relation between power manipulation and self-regulation was not mediated by changes in emotion. This null effect on emotional response replicated prior findings (Galinsky et al., 2003; Smith & Trope, 2006). In Experiment 2, we tested whether the observed effects could be attributed to changes in emotion as a result of the self-regulatory depletion manipulation. Neither mood valence nor arousal differed as a function of the depletion manipulation (Fs < 1, *ns*). Thus, the effects were not due to differences in emotion between depleted and nondepleted participants.

Discussion

In Experiment 2, we replicated and extended evidence from Experiments 1A and 1B that power can improve performance on tasks requiring self-regulation. Not only did high power improve self-regulatory performance under normal conditions, as in the previous two experiments, but it also counteracted the effects of ego depletion. Low-power and no-role neutral control participants both showed significant drops in self-regulation following a prior act of self-control, consistent with many previous findings on self-regulatory depletion. Past work has indicated that motivational incentives can temporarily counteract ego depletion (Muraven & Slessareva, 2003), and power seems to have the same effect. These findings suggest that high power is beneficial in terms of both promoting effective self-regulation and counteracting the deleterious consequences of self-regulatory depletion.

Experiment 3

Experiment 3 was initially designed as a conceptual replication of Experiment 2. It sought to show that power would counteract the effects of ego depletion and thereby improve performance. As we shall report, its results diverged from those of Experiment 2, and this was what initially led us to formulate the disdain hypothesis.

To increase generalizability, we changed the procedures for depleting self-regulatory resources, as well as the performance task. Experiment 3 measured performance on 3-Digit × 3-Digit multiplication problems. These are difficult calculations, especially to students accustomed to using electronic calculators, and so self-regulation is likely needed to ensure careful following of rules, sustained concentration, and perseverance.

Experiment 3 also used a different manipulation of self-regulatory depletion (borrowed from Baumeister et al., 1998) than the one used in Experiment 2. The depletion manipulation consisted of having participants develop a repeated behavioral pattern and then asking half of them to break the habit. Breaking habits constitutes a common form of self-regulation. As in past work, we assumed that participants who broke a habit would be depleted of their self-regulatory strength, compared with participants who did not break a habit.

Method

Participants. Fifty-nine undergraduates (41 women, 18 men) participated in exchange for partial course credit.

Materials and procedure. Participants completed the experiment in groups that ranged from 2 to 8 participants. Upon arrival, the experimenter explained that the purpose of the experiment was to examine cognitive processes related to visual detection and numeric accuracy.

After the cover story was given, participants were presented with a piece of text and were given instructions (both oral and written) to cross out all instances of the letter *e* in the text. Instructing participants to cross out the letter *e* was designed to create a strong behavioral habit of marking every *e* as soon as it was seen. Indeed, there were 337 instances of the letter *e* that appeared on this page, which made the habit of crossing out every *e* quite well-ingrained by the end of the first task. All participants were given 5 min to complete the first *e* task. After 5 min had elapsed, participants were given a second *e* task. By random assignment, participants were assigned to either the depletion or no depletion condition. Participants assigned to the depletion condition were given written instructions not to cross out the *e* if a vowel preceded it by two letters or if it was immediately followed by a vowel. Participants in the depletion condition thus had to override the habit formed in the first *e* task to cross out all instances of the letter *e.* Participants in the no depletion condition were told to continue crossing out each instance of the letter *e*, just as they had in the first task. All participants were given 5 min to complete the second *e* task.

After the second *e* task, participants completed the power prime used in Experiment 1B. Participants assigned to the power condition wrote about an instance when they had control over a person's actions or outcomes, whereas control participants wrote about their typical day. Participants were given 5 min to complete the power priming task. Because the main purpose of Experiment 3 was to investigate a possible boundary condition regarding the link between high power and self-control shown in Experiments 1A, 1B, and 2, we did not include a low-power condition.

When participants had completed the power priming task, participants were given 36 3-Digit × 3-Digit multiplication problems.

Because the study was run in a group format, we gave all participants 5 min to complete as many multiplication problems as possible. After 5 min, participants were debriefed and dismissed.

Results

Number of problems solved correctly. A 2 (high power vs. control) × 2 (depletion vs. no depletion) ANOVA on number of multiplication problems solved correctly revealed a significant interaction between depletion and power, $F(1, 55) = 5.25$, $p = .03$, $\eta^2 = .09$. Neither of the main effects was significant (Fs < 1, *ns*).

To clarify the interaction, we compared the number of multiplication problems completed correctly separately for the no depletion and depletion conditions. In the no depletion condition, high-power participants completed marginally fewer problems correctly ($M = 2.27$, $SD = 2.12$) than did control participants in the no depletion condition ($M = 3.67$, $SD = 1.84$) $F(1, 55) = 3.50$, $p < .07$, $\eta^2 = .06$. This is contrary to what was found in Experiment 2. Consistent with prior work, control participants completed more problems correctly when they were not depleted ($M = 3.67$, $SD = 1.84$), compared with when they were depleted ($M = 2.13$, $SD = 1.30$), $F(1, 55) = 8.12$, $p < .01$, $\eta^2 = .13$. Perhaps most surprisingly, high-power participants performed better when they were depleted ($M = 3.65$, $SD = 1.87$) than when they were not depleted ($M = 2.27$, $SD = 2.12$), $F(1, 55) = 3.61$, $p = .06$, $\eta^2 = .06$.

Number of problems attempted. To test for differences in number of multiplication problems attempted, a 2 (high power vs. control) × 2 (depletion vs. no depletion) ANOVA was conducted on the number of multiplication problems attempted. Neither the main effects nor the interaction was significant (Fs < 1, *ns*). Thus, neither the power manipulation nor the depletion manipulation affected the number of problems that participants attempted.

Speed/accuracy tradeoff. Last, we analyzed the proportion of correct solutions that participants obtained, thereby taking into account both the accuracy and the speed involved in completing the task. We computed the proportion by dividing the number of problems participants completed correctly by the number they attempted. A 2 (high power vs. control) × 2 (depletion vs. no depletion) ANOVA on the proportions of correct answers revealed a significant Depletion × Power interaction, $F(1, 55) = 12.90$, $p < .001$, $\eta^2 = .19$. Neither of the main effects was significant (Fs < 1, *ns*).

These results pointed toward the disdaining hypothesis. High-power participants solved a higher percentage of problems when depleted ($M = 0.69$, $SD = 0.26$) than when not depleted ($M = 0.39$, $SD = 0.32$), $F(1, 55) = 8.64$, $p = .005$, $\eta^2 = .14$. The latter mean is surprisingly low and bespeaks considerable carelessness among high-power participants who were not depleted, consistent with the idea that they withheld self-regulatory effort.

Performing worse when depleted than when not depleted is of course ironic and counterintuitive. Without the disdain response, one would expect the opposite. Sure enough, neutral participants, who were not reminiscing about moments of power, showed the opposite pattern: They did worse when depleted ($M = 0.43$, $SD = 0.35$) than when not depleted ($M = 0.68$, $SD = 0.21$), $F(1, 55) = 4.80$, $p = .03$, $\eta^2 = .08$.

Pilot Study on Task Perceptions

In an effort to reconcile the contrary results of Experiments 1–3, we conducted a pilot study ($n = 37$) to investigate whether the tasks used as dependent measures differed as to their perceived worthiness of a power holder's effort. We presented participants with information about a dichotic listening task (used in Experiments 1A and 2; "completing a dichotic listening game—i.e., paying attention to words presented in one ear while ignoring words presented in other ear"), an anagram task (used in Experiment 1B; "completing anagrams—i.e., rearranging letters to form a word"), and a multiplication task (used in Experiment 3; "completing long multiplication problems for 10 min without a calculator—e.g., 128 × 237"). Participants rated how much each task was indicative of a task that a person with influence over others would complete. All ratings were made with a scale ranging from 1(*not at all*) to 10 (*extremely*).

Participants rated both the dichotic listening task ($M = 5.08$, $SD = 2.54$) and anagram task ($M = 4.51$, $SD = 2.59$) as more indicative of an activity that would be completed by someone who has influence over others than the multiplication task ($M = 3.22$, $SD = 2.11$, ts > 3.35, ps $< .003$). The dichotic listening and anagram tasks did not differ in how much those tasks were perceived as indicative of tasks that a person who has influence over others would complete, $t(36) = 1.15$, $p = .25$. Thus, the multiplication task was deemed unsuitable for a powerful person or leader, as compared with the other two tasks. The dichotic listening and anagram tasks were rated close to the midpoint in terms of their appropriateness for a person who has influence over others, and the size of the relative difference between ratings of these tasks and the multiplication task was nontrivial (Cohen, 1977).

These results supported the interpretation that people with high power sometimes disdain tasks seen as unsuitable. The tasks used in Experiments 1 and 2 were rated here as moderately suitable for leaders, and hence, participants in the high-power condition performed well on them. The task used in Experiment 3 was viewed as considerably less worthy of a leader's effort, and we found that participants in the high-power conditions performed poorly on them (except when they were already depleted).

Discussion

Experiment 3 showed that participants who were primed with power performed relatively poorly on a task involving 3-Digit × 3-Digit multiplication problems, at least when their self-regulatory resources had not been depleted. In the previous experiments, high-power nondepleted participants performed best of all groups, whereas here, they performed worst. Their rejection of the task took the form of performing it carelessly, as reflected in a high error rate. They did not refuse outright to do it, nor did they sit there idly and leave all the items blank. Inspection of their worksheets indicated that they sometimes merely guessed at answers rather than writing down the several lines of calculation normally required for proper multiplication.

The findings from the pilot study suggested a likely reason for the difference between these results and those of the preceding studies: The task used in Experiment 3 was perceived as more suitable for underlings than for power holders. Participants who had been primed to think of themselves as powerful may therefore

have disdained the task as unsuitable for themselves and therefore withheld effort.

Thus, these results supported the view that power would reduce people's willingness to expend limited self-control resources on tasks perceived as unworthy of their efforts. The results of Experiment 3 also ruled out the possibility that high-power participants in Experiments 1A and 1B self-regulated effectively because the power manipulations caused them to think that power holders are smarter than underlings. If the effects of our power manipulations were similar to priming people with the construct or goal of being smart then one would expect that high-power participants would perform better than control participants in the current experiment. Instead, high-power participants performed worse on the multiplication problems than did control participants.

This pattern of task rejection (disdain) only occurred, however, when the self-regulatory resources of power-primed participants were intact and participants could therefore make a decision not to exert effort on the task. When their self-regulatory strength had been depleted, high-power participants did not seem to disdain the lowly task and in fact performed quite successfully. Control participants, in contrast, demonstrated the standard effect of impaired performance after prior expenditure of self-regulatory strength, compared with conditions in which they had not previously engaged in self-regulation.

These findings fit well with recent evidence showing that making decisions and self-control depend on the same psychological resource (Vohs et al., 2008). Active rejection of an assignment requires having sufficient self-regulatory resources. Under normal circumstances, power-primed participants rejected the assignment of completing a task that appeared unworthy of their effort and, hence, performed poorly. When power-primed participants lacked these necessary resources, they did not reject the assignment and therefore performed quite well.

To our knowledge, these findings are the second to ever find enhanced performance as a result of ego depletion (see Apfelbaum & Sommers, 2009). It is quite unusual for people to perform better as a result of having fewer resources or being fatigued. The most likely explanation is that depletion prevented the extra appraisal process that led other high-power participants to withdraw effort. To test whether the positive effects of depletion among power holders constituted more than a random fluke, we conducted Experiment 4.

Experiment 4

In Experiment 4, we had two main goals. The first was to resolve the apparent conflict between the effects of power on performance in Experiments 1, 2, and 3. The second was to confirm the depletion of self-regulatory resources among power holders.

Experiments 1A, 1B, and 2 showed that power generally improved performance and self-regulation. In Experiment 3, we identified an exception, in which high power led to poor performance. The different results appeared to be due to measuring self-regulatory performance on a task that was deemed unsuitable for someone with high power. They also depended on high-power participants having sufficient self-regulatory strength to evaluate the task and decide to withhold effort. In Experiment 4, we sought to replicate and extend the findings of Experiments 1–3 by manipulating power (high vs. control), self-regulatory depletion (depletion vs. no depletion), and type of task (typical of those high in power vs. atypical of those high in power) that participants completed. For Experiment 4, we obtained additional data to confirm that the tasks were perceived differently as to whether they were appropriate for power holders.

The other goal was to extend the resource depletion interpretation. We have suggested that power sometimes motivates people to invest high effort in a performance that can drain energy and that such self-regulation depends on a limited energy resource. Even when their resources are already depleted, we have found that people in power or leadership positions often self-regulate so as to continue to put forth high effort. If so, then they should be all the more depleted when this task is done. After all, in our theory, we assume that power does not really confer any more energy or capability—it merely motivates people to expend more of what they have. Were they then confronted with yet another demand for performance, they might find that their resources are now severely depleted, and their performance on this later task would suffer accordingly.

Therefore in Experiment 4, all participants were confronted with a surprise third performance demand, to assess the aftereffects of performance on the first and second tasks. As in Experiments 2 and 3, participants were exposed to a self-regulatory depletion manipulation, were exposed to a power manipulation, and then performed a self-regulation task as the main dependent measure. After this, however, all participants completed an additional, unexpected measure of self-regulatory performance. We have proposed that high power increases willingness to expend resources on the task at hand, even when resources have already been depleted by a previous task. If this is the case then power holders should end up being especially depleted. Confronting them with a difficult third task might reveal this advanced state of ego depletion, consistent with previous findings on conserving versus expending resources (Muraven et al., 2006). We therefore predicted that high-power participants whose self-regulatory strength had been depleted would perform effectively on a second self-regulation task—but that this increased energy expenditure would lead to impaired performance on a third self-regulation task, as compared with participants in the other conditions.

The additional task is relevant because we have suggested that the effects of power on self-regulation stem from increasing motivation. Self-regulation depends on a limited resource, and it is implausible that power increases the resource itself. Rather, power likely increases people's willingness to expend their self-regulatory resources. Insofar as the resource has already been depleted by prior exertions, further exertion should produce further depletion. If so, then the resource depletion should be particularly apparent when unexpected additional demands are made on it in the form of a third test of self-regulation.

Method

Participants. One hundred sixty-five undergraduates (112 women, 53 men) participated in exchange for partial course credit.

Materials and procedure. Participants arrived at the laboratory individually for a study purportedly investigating personality and attention. After giving informed consent, participants completed the leadership questionnaire. While the experimenter was

ostensibly scoring the leadership questionnaire, participants viewed the 6 min video clip used in Experiment 2 used to manipulate attention control demands. By random assignment, half the participants were instructed not to look at any of the words presented at the bottom of the screen during the video clip (depletion condition), whereas the other half of the participants were instructed to watch the video clip as they would naturally watch television (no depletion condition). After watching the video clip, participants completed the BMIS (Mayer & Gaschke, 1988), which allowed us to test whether the depletion manipulation produced changes in mood.

Next, participants were assigned to a role of manager (high power), or they were told that they would learn of the role to which they were assigned later in the experiment (control). To test for possible mood effects as a result of the power manipulation, participants then completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). We used the PANAS as a second measure of emotion to prevent potential sensitization effects from repeated use of the BMIS.

After completing the PANAS, participants completed one of two self-regulation tasks. One of the self-regulation tasks consisted of participants completing as many 3-Digit × 3-Digit multiplication problems as they could without the aid of a calculator. The other self-regulation task involved the completion of the commercially available board game Operation. The intended difference between the Operation game and the multiplication task was that the former would be more appropriate than the latter for power holders to perform (see Validation Study below).

Participants who played the Operation game were instructed to extract 11 different objects from holes using tweezers. The experimenter instructed participants that they were to try their best not to touch the side of the holes when extracting the plastic bones and that a buzzer would sound each time that the tweezers touched the side of the holes. If participants were unsuccessful after three attempts to extract each object, the experimenter instructed the participant to move on to the next object.

Participants who completed the multiplication task, in contrast, were told that they would be given a certain amount of time to correctly complete as many multiplication problems as possible. The experimenter handed participants one page of 36 multiplication problems that were 3-Digit × 3-Digit and gave participants 5 min to complete as many as possible.

After completing their respective self-regulation task, participants were instructed that they would complete a listening game. Participants then received instructions and completed the dichotic listening task used in Experiments 1A and 2. When participants had finished the dichotic listening task, participants were debriefed and dismissed.

Validation study on perception of tasks. To confirm that the multiplication task was perceived as less suitable for a power holder than the Operation game, we conducted a separate validation study ($n = 54$). Because we wanted to include a third task that would be deemed as relatively worthy of a powerful person's effort, these undergraduates also provided ratings of the dichotic listening task, which we intended to use as the final self-regulation task that all participants would complete. Participants were given a brief description of the multiplication task ("completing long multiplication problems for 10 min without a calculator—e.g., 128 × 237"), the Operation game ("completing a motor skill game—e.g., extracting objects from tiny holes in the most accurate and efficient manner possible"), and the dichotic listening task ("completing a dichotic listening game—e.g., paying attention to words presented in one ear while ignoring words presented in other ear") and then rated how appropriate the task would be for a person who has influence over others. All ratings were made with a scale ranging from 1 (*not at all*) to 10 (*extremely*). Results confirmed that participants rated the Operation game ($M = 4.78$, $SD = 2.57$) as significantly more indicative of a task that would be completed by a person who has influence over others than was the multiplication task ($M = 3.37$, $SD = 2.48$), $t(53) = 4.07$, $p < .001$. Compared with the multiplication task, the dichotic listening task was likewise rated as more indicative of a task that a person with influence over others would complete ($M = 4.94$, $SD = 2.85$), $t(53) = 3.71$, $p < .001$. The Operation game and the dichotic listening task were rated equally in terms of being suitable for power holders, $t(53) = 0.41$, $p = .68$.

Results and Discussion

Task performance. The main hypothesis was that relative to control participants, high-power participants would perform better on a task that was worthy of a high-power person's efforts (Operation game) than a task that was considered less worthy of a high-power person's effort (multiplication problems). We also expected to replicate the findings from Experiments 2 and 3, namely that high-power participants would perform successfully even after their self-regulatory strength had been depleted.

Performance was measured by the number of errors participants made in the Operation game and the percentage of multiplication problems solved correctly. Performance scores on each of these measures were standardized. For ease of interpretation, we multiplied scores on the Operation game by (−1) so that higher scores indicated better self-control. Therefore, higher scores on each task indicated better performance.

A 2(high power vs. control) × 2(depletion vs. no depletion) × 2(Operation game vs. multiplication problems) ANOVA on standardized performance scores revealed a main effect of power, $F(1, 156) = 10.07$, $p = .002$, $\eta^2 = .06$, a significant Depletion × Power interaction, $F(1, 156) = 25.55$, $p < .001$, $\eta^2 = .14$, and a significant Power × Type of Task interaction, $F(1, 156) = 6.13$, $p < .02$, $\eta^2 = .04$. The most important finding, however, was the predicted three-way interaction among power, depletion, and type of task, $F(1, 156) = 4.60$, $p < .04$, $\eta^2 = .03$ (see Figure 3).

As Figure 3 shows, on the Operation game (which was rated as suitable for persons with high power), managers performed better than neutral controls. This was true both when participants were depleted and when they were not depleted.

The pattern was quite different with the multiplication task, however. On that task, which was deemed unsuitable for persons with high power, managers performed rather poorly, just like participants primed with high power in Experiment 3. Also, crucially, and again as in Experiment 3, the disdaining of the task by persons with high power was eliminated and even reversed when participants had already depleted their resources by breaking a habit. Looked at another way, nonpower participants showed the usual depletion effect, in which performance was poorer when they were depleted than when they were not depleted. But participants primed with power showed the opposite. The reversal was signif-

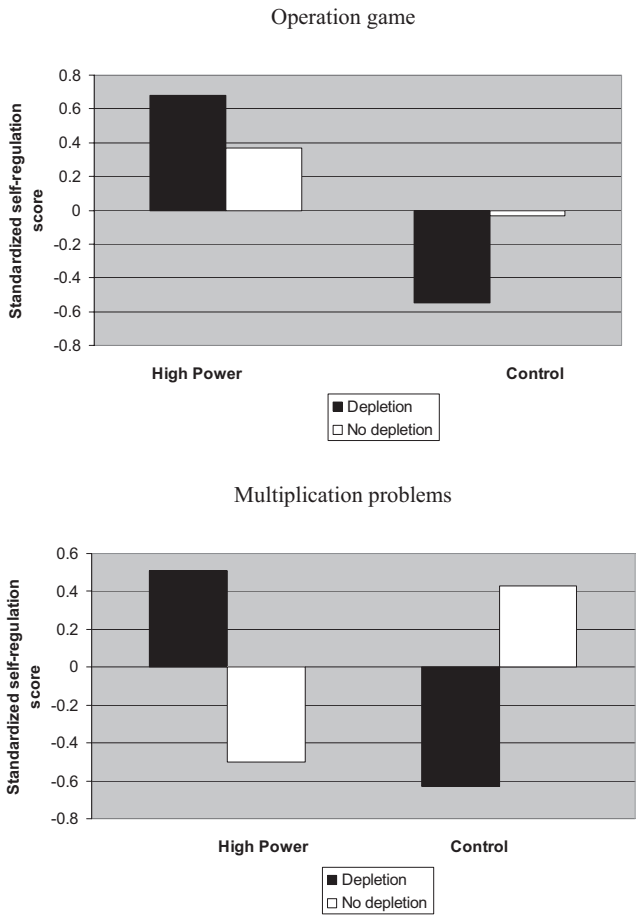

Figure 3. Interaction effect of power, depletion, and type of task on self-regulation performance in Experiment 4. Values refer to standardized self-regulation scores on the number of errors made in the Operation game and the percentage of multiplication problems completed correctly. Higher values indicate better self-regulation.

icant: High-power participants performed significantly better at the multiplication task when they had performed the depleting, habit-breaking exercise than when their resources were intact, $F(1, 156) = 16.48$, $p < .001$, $\eta^2 = .10$.

Dichotic listening performance. A particular focus of Experiment 4 was how people would perform on the unexpected third task. The first (video watching) task depleted (some of) them, and the second task (Operation or multiplication problems) measured how they performed as a result. The third task looked for aftereffects. An ANOVA on dichotic listening yielded a significant interaction between power and depletion, $F(1, 161) = 3.97$, $p < .05$, $\eta^2 = .03$, as well as main effects for power, $F(1, 161) = 18.47$, $p < .001$, $\eta^2 = .10$, and of depletion, $F(1, 161) = 11.01$, $p = .001$, $\eta^2 = .06$. No effects involving type of (second) task were significant. Inspection of Figure 4 suggests that all three significant effects are due to the relatively poor performance of participants in the high-power, depleted condition. They performed worse than did those in all other conditions, and the means for the other conditions were all about the same.

These results seem most consistent with our characterization of the effects of power on self-regulation as due to motivating people to expend their limited resources. It is not that people with high power disdain the dichotic listening task as being unsuitable. The results of our previous studies showed that the direct effects of power manipulations on dichotic listening performance were positive: High-power participants performed better than did others on this task when the high-power participants were not depleted (Experiment 1A) and when they were depleted (Experiment 2). What was different in Experiment 4 was that the strenuous intervening task had consumed considerably more self-regulatory resources. High-power participants in this study who had also performed the initial depletion task involving habit-breaking turned in the best performance of any group on both the Operation game and the multiplication task. The expenditure of their diminished resources on this second task must have left them especially depleted, however, to the point at which the demands of a third task began to exceed their capacity to control their attention. Depleted control participants, in contrast, did not exert as much effort on the Operation game or multiplication tasks as depleted high-power participants and, hence, had more resources available to aid in their dichotic listening performance. Hence, depleted high-power participants performed worse than did all other groups on this final task.

Emotion. We included measures that would allow us to test whether the effects of depletion and power on self-regulation were due to differences in mood. Participants completed the BMIS after the depletion manipulation and completed the PANAS after the power manipulation. ANOVAs yielded no significant differences between depletion and no depletion participants in terms of their mood valence and arousal scores on the BMIS (Fs < 1, *ns*). In addition, high-power and control participants did not differ in terms of their positive affect or negative affect (Fs < 1.03, ps $> .31$). These findings replicated those of the previous experiments and provide further evidence that the effects were not mediated by differences in mood.

Experiment 5

Thus far we have shown that high power can improve or impair the self-regulation of performance—depending on whether the

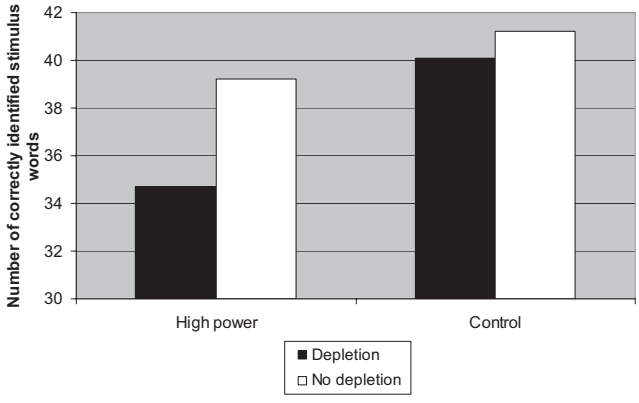

Figure 4. Interactive effect of power and depletion on a third self-regulation task in Experiment 4. Values refer to mean number of correctly identified stimulus words on the dichotic listening task. Higher values indicate better self-regulation performance.

task was deemed suitable for someone in a leadership role. Experiment 4 showed both effects. One possible objection to those findings is that the task process itself might have contributed to the results, in effect confounding suitability with inherent features of the task or enjoyment of it. The main goal in Experiment 5 was to resolve that problem. We used the same task for all participants and relied on manipulating the perception of it as suitable versus unsuitable for someone with high power.

Thus, in Experiment 5, we sought to demonstrate that framing the same task as worthy or unworthy of a power holder's effort could alter performance among high power and, possibly, low-power participants. When a task is framed as worthy of a power holder, then having high power should improve self-regulation. If the same task is framed as appropriate to an underling, however, then high-power participants should withdraw their effort and, hence, perform poorly. Framing a task as worthy of an underling's efforts may energize the executive function of low-power participants and cause improvements in self-control, unlike the effect of such framing on someone with high power.

Several other refinements deserve note. First, different tasks (from those used in Experiments 1A, 2, and 4) were used to ostensibly determine participants' position within their group's hierarchy (Maner & Mead, 2010). Second, participants in Experiment 5 expected to complete a group task regarding a topic that was highly relevant to power hierarchies, namely deciding how to divide a large sum of money among four employees (adapted from Anderson & Berdahl, 2002).

Third, the measure of self-regulation of performance was perseverance on an open-ended problem-solving task. Perseverance has often been used as a measure of self-regulation, particularly because perseverance decreases when self-regulatory resources are depleted (e.g., Baumeister et al., 1998). It is normal to become discouraged, distracted, fatigued, or otherwise disinclined to continue working on the same task, and so self-regulation is necessary to override these impulses and sustain work.

Method

Participants. One hundred seventy-two undergraduates (116 women, 56 men) participated in exchange for partial course credit.

Materials and procedure. Participants arrived at the lab individually for a study concerning leadership styles and group interactions. The experimenter informed participants that they would complete a group task with two other same-sex participants. Before the group task, however, participants were instructed that they would complete a series of questionnaires related to natural leadership ability so that the experimenter could assign one group member to be the leader of the group. First, participants completed a leadership questionnaire in the privacy of their individual room. Next, the experimenter handed participants the remote associates test (RAT; Mednick, 1968). The RAT was described as a measure that assessed how quickly participants were able to think on their feet. The experimenter emphasized that being able to determine things quickly is an important skill for leaders. The experimenter left the room for 5 min while participants completed the RAT.

After 5 min, the experimenter returned, collected the RAT and leadership questionnaire, and then left purportedly to score these materials. The experimenter returned with a scoring sheet that had the participant's score and the ostensible scores of the other two group members. For participants assigned to the leader condition, the scoring sheet had the word "LEADER" printed in red ink on the top of the scoring sheet and showed that the participant had the highest scores on the leadership measures and therefore would be assigned the role of the leader in the group task. Participants in the leader condition were told that they would control how the group task was performed, would evaluate the performance of their subordinates, and would decide how a $15 cash reward would be split between the participant and his or her two subordinates. Participants in the follower condition, in contrast, were presented with a scoring sheet that had the word "SUBORDINATE" printed in red ink at the top and showed that the participant had the lowest scores on the leadership measures relative to the 2 other participants. The experimenter told participants in the follower condition that the assignment of the first subordinate is done first because one person sometimes scores a lot lower than the other two members of the group. Participants in the follower condition were told that they would not decide how the group task was performed, would have their performance evaluated by the leader, and would not be able to decide how the $15 cash reward would be split among the 3 group members. No-role participants received a description of the group task and were informed that it would take some more time to determine who would be assigned to occupy the leader role in the group task.

After receiving the leader, follower, or no-role feedback and role assignment, participants completed the PANAS (Watson et al., 1988). When the participant had finished the PANAS, the experimenter returned to the participant's room and said that another experiment required immediate attention, and therefore, the group task would be postponed for another day. Leaders were told that they would be contacted in the next 24 hr and would determine when and where the group task would take place. The experimenter informed participants in the follower condition that they would be contacted in the next 24 hr and that they would not have a say as to where and when they would complete the group task—the leader would make those decisions. No-role participants were told that the researchers in charge of the experiment would contact them shortly and coordinate a time at which all 3 participants could complete the group task. The experimenter then left the participant's room to obtain a task for them to do while the experimenter attended to the other experiment.

After 2 min, the experimenter returned with a sheet of paper labeled "Word Generation Task." The experimenter handed the sheet to the participant, which contained a series of letters ("MAPLE SYRUP") and instructed participants to create as many words in the English language (not using any proper nouns) as they could for as long as they wanted. To give participants an understanding of how the task was relevant to the experiment, the experimenter handed participants a sheet of paper that contained a bogus news article. By random assignment, participants read an article that reported the results of a study showing that word generation tasks were meant to be performed either by people in positions of high power (high-power frame condition) or by people in positions of low power (low-power frame condition). The experimenter left the room while the participant read the news article.

After 5 min, the experimenter returned, gave the participant a credit slip for participating, and instructed participants to begin the word generation task. Because there would be no possibility of

seeing the participant again that day, the experimenter informed participants that they should deposit their completed word generation task in a box labeled "Extra Questionnaires" whenever they decided to stop working. The experimenter thanked the participant for taking part in the experiment and then left the participant's room. Unbeknownst to participants, the experimenter waited down the hall from the participant's room and recorded the amount of time participants worked on the word generation task using a stopwatch. After the participant stopped working, the experimenter escorted the participant back to his or her room, and debriefed the participant.

Results

Perseverance. A 3 (leader, follower, no role) × 2 (high-power frame, low-power frame) ANOVA was conducted with the amount of time participants persisted as the dependent variable. It revealed a significant Role × Task Framing interaction, $F(2, 166) = 9.29$, $p < .001$, $\eta^2 = .05$.

As shown in Figure 5, the leaders (i.e., high-power role condition) adjusted their effort according to the framing of the task. Leaders persisted significantly longer when the task was presented as a leader's task than when it was presented as a follower's task, $F(1, 166) = 12.53$, $p < .001$, $\eta^2 = .07$. Subordinates (low-power condition) showed a smaller effect in the opposite direction, $F(1, 166) = 6.20$, $p = .01$, $\eta^2 = .04$. No-role participants performed almost exactly the same regardless of how the task was framed.

The disdaining effect was replicated once again. Of the six cells depicted in Figure 5, the lowest mean was furnished by leaders who were confronted with the unworthy task. A contrast confirmed that they spent significantly less time on the task than the combined mean time of participants in the other five conditions, $F(1, 170) = 9.12$, $p = .003$, $\eta^2 = .05$. No such disdaining effect was found among followers who were confronted with a task that was worthy of a power holder's efforts ($F < 1$, *ns*). Thus, the disdaining effect was unique to leaders.

Performance (i.e., number of solutions generated) was significantly correlated with perseverance, such that the longer one worked, the more solutions one generated ($r = .62$, $p < .001$).

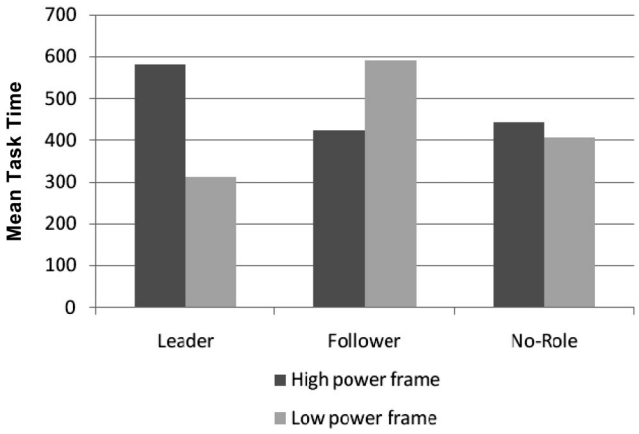

Figure 5. Persistence as a function of power condition and task framing condition in Experiment 5. Values on the *y*-axis refer to the mean number of seconds participants persisted on the word generation task.

Results from an ANOVA yielded a similar pattern of results and another 2 × 3 interaction between role and task framing, $F(2, 165) = 8.06$, $p < .001$, $\eta^2 = .05$. (Data from 1 participant were lost because of research assistant error.)

Emotion. As in the previous experiments and prior work in the power literature (Galinsky et al., 2003; Smith & Trope, 2006), there was no significant variation among the three power conditions in terms of either positive affect or negative affect (Fs < 1, *ns*). These findings contradict the alternative explanation that the effects were attributable to differences in positive or negative affect.

Discussion

Experiment 5 provided additional support for our hypothesis that the relation between power and self-regulation of performance depends on whether the task is seen as worthy or unworthy of a power holder's efforts. Participants who occupied a role of leader, compared with participants in the follower and no-role conditions, performed better when the task was framed as worthy of a power holder's effort. Leaders also disdained an assignment to work on a task that was unworthy of their efforts. All participants completed the same self-control task, but framing the task as worthy or unworthy of a power holder's effort was enough to alter performance.

General Discussion

The present investigation was focused on how power and leadership influence the self-regulation of task performance. Although power and leadership are by definition interpersonal roles, the people who occupy them are often faced with solitary tasks. Many such tasks are not intrinsically enjoyable, and so successful performance may require that the person override impulses to quit or slack off, so that high effort can be sustained as long as necessary. The tasks used in the present studies involved precisely that sort of self-regulatory demand.

Our first hypothesis was that assignment to a position of power or leadership would improve performance by increasing the motivation to self-regulate. The responsibility of leadership can enhance prosocial motivation to perform effectively for the group, so as to advance its goals, fulfill one's responsibilities, and set a good example for subordinates (Willer, 2009). As a result, leaders and other power holders would regulate themselves to maintain high effort and to resist impulses to take it easy.

However, it is crucial that leaders may often face more demands than they can realistically handle. Their time and energy are limited, and effective leadership often entails putting one's efforts into tasks that the leader alone can perform (or can perform best). As a result, power holders may often find it best to appraise task demands as to whether to put one's best efforts into them or instead leave them for others whose time and energy are less valuable.

Without an effective appraisal process, leaders would squander their limited time and energy completing tasks that could (and should) be completed by subordinates. Hence, our second hypothesis was that leaders should disdain tasks that seem unworthy of them by withdrawing their effort, which would result in poorer performance.

The results from our six experiments provided converging evidence in support of these two hypotheses. Consistent with our first hypothesis, assignment to a powerful role led to significant improvements in performance on tasks for which self-regulation of effort is decisive (Experiments 1A and 2). Recalling past experiences of wielding power likewise caused improvements in self-control performance (Experiment 1B). The importance of self-regulation was shown particularly in Experiment 2, which induced a state of ego depletion (reduced self-regulatory resources) among half the participants. This state led to poor performance on the dichotic listening task, as in many previous studies, in the neutral control and low-power conditions. High power eliminated this effect. Thus, high power overcame the usual pattern by which depleted capacity for self-regulation impairs performance. Leaders continued to put forth high effort and perform well, even when depleted.

Experiments 3–5 offered several tests of our second hypothesis regarding the possible disdaining effect among power holders. The results from each experiment demonstrated various conditions under which power holders withdrew their effort on tasks deemed relatively unworthy of a power holder's effort, resulting in poor performance compared with people in neutral or low-power positions. Experiment 3 showed that participants in a high-power mindset performed substantially worse on a simple but arduous multiplication task. Pilot data confirmed that this task differed from the tasks used in Experiments 1–2 in that the multiplication task was deemed relatively unworthy of a leader's best effort.

Perhaps surprisingly, however, ego depletion elicited high effort and superior performance in Experiment 3's high-power condition, even on the otherwise despised multiplication task. This result underscores the importance of the hypothesized appraisal process, which is itself a form of self-regulation. Apparently, when power holders feel their resources are depleted, they skip the self-regulatory appraisal of the task's suitability and simply use their self-regulatory resources to push themselves to perform effectively on whatever task is at hand. This resulted in leaders actually performing better on the multiplication task when depleted than when not depleted. That finding of ego depletion causing improved performance is highly unusual (indeed absent) in the research literature on self-regulation, but we obtained it in different experiments, with different procedures and measures.

Experiments 4 and 5 provided additional evidence that the benefits of a powerful role on self-control were limited to tasks that were perceived as worthy and suitable for leaders. These improvements in self-regulation were found regardless of whether leaders were in full possession of their self-regulatory resources or were in a state of ego depletion. Thus, power holders disdained tasks that were unworthy of their effort—unless their capacity for appraisal processing had been impaired from prior expenditure of mental energy.

The strength model holds that self-control relies on a limited resource such as glucose in the bloodstream (Baumeister et al., 2007). It seems unlikely that being assigned to a leadership role or recalling past experiences of wielding power would cause an increase in those resources, akin to how consuming sugar produces a quick rise in blood glucose levels (cf. Gailliot et al., 2007). Instead, we proposed that power increases group-oriented motivation and thereby makes leaders willing to expend their limited and even depleted (remaining) resources. This view is best supported by the findings in Experiment 4, in which participants were confronted with an unexpected additional task that also demanded self-regulation, coming after both the depletion manipulation and the primary dependent measure. For some participants, then, the dichotic listening task was the third self-control task in the experiment: First was the manipulation (controlling their attention while watching the video), second was the main measure of self-regulatory performance (the Operation game or the math problems), and then third was the dichotic listening task. The poorest performance on this third task was exhibited by participants who had been assigned to the leader role and who had suffered ego depletion resulting from the attention-control task. The implication was that these leaders had so far depleted their self-regulatory resources on the first two tasks that they were unable to perform effectively on the third.

The contrast between the poor self-regulatory performance by high-power persons in Experiment 4 and the relatively good performance on the same dichotic listening task by high-power participants in Experiments 1A and 2 is quite revealing. The only difference was the intervening task in Experiment 4, and it was itself a very depleting task because depleted high-power participants outperformed all others on it. Thus, high power made participants willing to expend their already depleted energies on performing well on the second task—leaving them even more depleted, so that when an unexpected third task was assigned, they did not have enough remaining resources to perform well. These results are consistent with prior evidence that when people expend and deplete their resources on a first and second task, they tend to show severe depletion and therefore perform exceptionally badly on a third task (Muraven et al., 2006).

Our proposed model can be thought of as framework from which to identify internal and external factors that can lead to power having positive and negative effects on self-regulation. Power promotes a mental state focused on pursuing goals (Smith & Trope, 2006; Vescio et al., 2005, 2003) and, accordingly, causes power holders to prioritize activities so as to maximize resources available for pursuing goals. Hence, power tends to promote a general willingness to expend resources and exert high effort on the task at hand. This is tempered by a sense that one should conserve one's resources for important tasks by not wasting them on frivolous or irrelevant tasks. Appraising a task as suitable or unsuitable is thus necessary for judicious use of resources. However, when resources are already depleted, the powerful person skips the appraisal and barrels ahead with high effort and exertion.

Implications Regarding Power

Good self-control and judicious use of resources would be highly advantageous for powerful persons and leaders. The advantages become even more obvious in light of recent evidence that the same willpower resource that is used for self-control is also used for making decisions (Vohs et al., 2008). Almost by definition, leaders must make decisions that affect not only themselves but also many others, and so leaders and followers alike have a stake in enabling the leader to make wise choices.

Our results fit the conclusion that power increases the sense of responsibility toward one's group (Willer, 2009), which can motivate the person to make exertions and sacrifices to do what is best for the group. Most of our findings supported the view that leaders

self-regulated their effort to work extra hard to succeed at the tasks that came their way. The main exception was when the leaders appraised the task as not worthy of them. In that case, they withdrew effort and performed relatively poorly. Although poor performance is not generally considered adaptive, in a larger context it is appropriate and adaptive for leaders to conserve their energies for the most important tasks they face, especially ones that need to be done specifically by the leaders.

Our results also indicate one circumstance that may make leaders especially vulnerable to self-regulatory failure and, by implication, vulnerable to acting or deciding in costly, self-defeating ways. These could ultimately produce problems that could be regarded by others as decisive or spectacular failures of leadership. When leaders have already expended some of their resources and reach a preliminary state of ego depletion, they cease to conserve their resources effectively and will instead expend their remaining resources—even on a task that is not a suitable or proper use of their energies. This produces an even more extreme state of depletion. If at that point yet another demand arises, perhaps unexpectedly, leaders may be in such a depleted state that they find themselves unable to perform effectively, like the depleted leaders confronted with the dichotic listening task in Experiment 4. Hence, under those circumstances and despite their normal tendency to rise to the occasion, leaders may perform exceptionally poorly.

The upshot of this could well be an important pattern of unsuccessful leadership. When resources are depleted, the leader is still motivated to self-regulate his or her performance but may do so ineffectively. Specifically, depleted leaders may pour their time and energy into the wrong tasks, exerting themselves strongly on tasks that would be better performed by underlings and further depleting their energies. As a result, they may reach the point of being unable to discharge their duties subsequently.

Implications for Self-Regulation

The present findings make four contributions to the self-regulation literature. We list them here in order of increasing novelty. First, the findings add further evidence indicating that self-regulation depends on a limited energy resource that becomes depleted after prior use (for review, see Baumeister et al., 2007). Specifically, we have found that interpersonal roles can moderate how people cope with ego-depleting tasks (see also Vohs, Baumeister, & Ciarocco, 2005). Second, our findings add to theory and research that motivational incentives can overcome the effects of depletion, so that depleted persons can self-regulate effectively—though at a later cost entailing even more severe depletion (Muraven et al., 2006; Muraven & Slessareva, 2003).

Third, our findings fill a gap in the literature regarding the possibility that managing the limited resource is itself an act of self-regulation and thus depends on the same resources used for other acts of self-control. In other words, if self-control requires willpower, some of that willpower is used in deciding whether to exert willpower on a current task. We found that powerful people did occasionally decide to withhold effort from certain tasks. However, when their resources were already depleted, they seemed to skip this decision process and performed well. This produced the seemingly ironic finding that depleted leaders performed better on certain tasks than did nondepleted leaders.

The improvement in performance of depleted leaders was the fourth contribution. To our knowledge, this is the first finding that self-regulatory depletion can improve performance. Indeed, only one other finding exists that shows any sort of positive outcome among people who are in a depleted state: Depleted White students, compared with nondepleted White students, were liked better by Black interaction partners (Apfelbaum & Sommers, 2009). Just as depletion led White students to skip the usual self-censoring processes that often result in strained interracial interactions, depleted power holders in the present Experiments 3–5 skipped the appraisal process that could identify a task as unsuitable and therefore unworthy of a leader's effort.

Limitations and Alternative Explanations

The results from the experiments reported in this article provide support for the view that power influences self-control through increasing selectivity to exert or conserve intrapsychic energy. Despite the consistency of these results, there are limitations and alternative explanations that warrant consideration. One possibility was that the effects of power on self-control would be mediated by fluctuations in emotion. Our results consistently contradicted a mood mediation explanation, however. High-power participants did not report emotional states that differed from low-power or control participants in any of the current studies in which emotion was measured.

A second possibility is that the current effects, particularly those found in Experiments 1A–3, could be explained as a result of low power reducing self-control as opposed to high power improving self-control. Against this line of reasoning, the results of those studies showed that high-power participants performed better than did both low-power and neutral or no-role control participants. Low-power participants and control participants generally did not differ from each other (see Smith & Trope, 2006, for similar results). These findings complement prior research demonstrating highly variable responses among people high in power, relative to people low in power (Galinsky et al., 2003; Guinote, Judd, & Brauer, 2002; Weick & Guinote, 2008). Low-power participants outperformed high-power and control participants when the self-control task was framed as worthy of a low-power person's effort (Experiment 5). Thus, high power appears to have been the main cause behind the improvements in self-control, though participants low in power performed well when the task was framed as worthy of an underling's effort.

A possible alternative explanation for some of the results is that high-power participants appeared to perform well because the feedback participants in the control condition received (i.e., that they would receive information regarding their assignment to power condition later in the study) caused these participants to experience more uncertainty and, hence, may have depleted the participants' resources more than did the high-power feedback. The results of Experiments 1A, 2, 4, and 5 contradict this explanation, however. In those studies, control participants did not differ in their performance from low-power participants. Hence, the possible uncertainty involved in the control feedback did not cause any difference in performance compared with participants who received definitive feedback regarding their assignment to a position of low power.

Our results did not provide much support for the hypothesis that power holders would generally become self-indulgent and exhibit lax self-control (Keltner et al., 2003). A possible limitation of our procedures, however, was that they offered scant opportunities for the sort of corrupt, exploitative, selfish behaviors that have been among the worst excesses of powerful persons. We found that power holders generally responded favorably to demands for self-regulation in task performance. Future work may complement these findings by examining the effects of power on impulse control dilemmas under conditions of severe temptation. Then again, perhaps underlings would resist temptation no better than would power holders. It is possible that the corrupt indulgences of power holders stem not from the psychological effects of power on self-control but simply from the increase in opportunities. In any case, self-regulatory failures in resisting temptation would largely be orthogonal to the present focus on self-regulation of task performance.

Concluding Remarks

Poor self-control among leaders can have a broad range of effects on followers, ranging from gossipy entertainment to blood-soaked catastrophe. Our results provide one small basis for optimism, which is that the first impact of power appears to be creating a mental state and motivational orientation that favor good self-regulation. Faced with task demands, leaders seem to rise to the occasion and exert themselves to perform well. This willingness to work was tempered only by an apparent appraisal process that deems some tasks as unworthy of the leader's attention. Our findings indicate how both processes can work effectively—and how they can both occasionally go wrong.

References

Anderson, C., & Berdahl, J. L. (2002). The experience of power: Examining the effects of power on approach and inhibition tendencies. *Journal of Personality and Social Psychology, 83,* 1362–1377. doi:10.1037/0022-3514.83.6.1362

Apfelbaum, E. P., & Sommers, S. R. (2009). Liberating effects of losing executive control: When regulatory strategies turn maladaptive. *Psychological Science, 20,* 139–143. doi:10.1111/j.1467-9280.2009.02266.x

Baumeister, R. F. (1998). The self. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., pp. 680–740). New York, NY: McGraw-Hill.

Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology, 74,* 1252–1265. doi:10.1037/0022-3514.74.5.1252

Baumeister, R. F., Senders, P. S., Chesner, S. C., & Tice, D. M. (1988). Who's in charge here? Group leaders do lend help in emergencies. *Personality and Social Psychology Bulletin, 14,* 17–22. doi:10.1177/0146167288141002

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16,* 351–355. doi:10.1111/j.1467-8721.2007.00534.x

Biernat, M., Vescio, T. K., & Billings, L. S. (1999). Black sheep and expectancy violation: Integrating two models of social judgment. *European Journal of Social Psychology, 29,* 523–542. doi:10.1002/(SICI)1099-0992(199906)29:4<523::AID-EJSP944>3.0.CO;2-J

Biernat, M., Vescio, T. K., & Green, M. L. (1996). Selective self-stereotyping. *Journal of Personality and Social Psychology, 71,* 1194–1209. doi:10.1037/0022-3514.71.6.1194

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior.* New York, NY: Springer-Verlag.

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences.* New York, NY: Academic Press.

DeWall, C. N., Baumeister, R. F., Gailliot, M. T., & Maner, J. K. (2008). Depletion makes the heart grow less helpful: Helping as a function of self-regulatory energy and genetic relatedness. *Personality and Social Psychology Bulletin, 34,* 1653–1662. doi:10.1177/0146167208323981

French, J., & Raven, B. H. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in social power* (pp. 150–167). Ann Arbor, MI: Institute for Social Research.

Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology, 90,* 351–367. doi:10.1037/0022-3514.90.3.351

Gailliot, M. T., Baumeister, R. F., DeWall, C. N., Maner, J. K., Plant, E. A., Tice, D. M., . . . Schmeichel, B. J. (2007). Self-control relies on glucose as a limited energy source: Willpower is more than a metaphor. *Journal of Personality and Social Psychology, 92,* 325–336. doi:10.1037/0022-3514.92.2.325

Galinsky, A. D., Gruenfeld, D., & Magee, J. (2003). From power to action. *Journal of Personality and Social Psychology, 85,* 453–466. doi:10.1037/0022-3514.85.3.453

Galinsky, A. D., Magee, J. C., Gruenfeld, D. H., Whitson, J., & Liljenquist, K. A. (2008). Social power reduces the strength of the situation: Implications for creativity, conformity, and dissonance. *Journal of Personality and Social Psychology, 95,* 1450–1466. doi:10.1037/a0012633

Gilbert, D. T., Krull, D. S., & Pelham, B. W. (1988). Of thoughts unspoken: Social inference and the self-regulation of behavior. *Journal of Personality and Social Psychology, 55,* 685–694. doi:10.1037/0022-3514.55.5.685

Guinote, A. (2007a). Power affects basic cognition: Increased attentional inhibition and flexibility. *Journal of Experimental Social Psychology, 43,* 685–697. doi:10.1016/j.jesp.2006.06.008

Guinote, A. (2007b). Power and goal pursuit. *Personality and Social Psychology Bulletin, 33,* 1076–1087. doi:10.1177/0146167207301011

Guinote, A. (2007c). Power and the suppression of unwanted thoughts: Does control over others decrease control over the self? *Journal of Experimental Social Psychology, 43,* 433–440. doi:10.1016/j.jesp.2006.03.003

Guinote, A. (2008). Power and affordances: When the situation has more power over powerful than powerless individuals. *Journal of Personality and Social Psychology, 95,* 237–252. doi:10.1037/a0012518

Guinote, A., Judd, C. M., & Brauer, M. (2002). Effects of power on perceived and objective group variability: Evidence that more powerful groups are more variable. *Journal of Personality and Social Psychology, 82,* 708–721. doi:10.1037/0022-3514.82.5.708

Keltner, D., Gruenfeld, D., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review, 110,* 265–284. doi:10.1037/0033-295X.110.2.265

Latané, B., Williams, K. D., & Harkins, S. (1979). Many hands make light the work: The causes and consequences of social loafing. *Journal of Personality and Social Psychology, 37,* 822–832. doi:10.1037/0022-3514.37.6.822

Maner, J. K., & Mead, N. L. (2010). The essential tension between leadership and power: When leaders sacrifice group goals for the sake of self-interest. *Journal of Personality and Social Psychology, 99,* 482–497.

Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology, 55,* 102–111. doi:10.1037/0022-3514.55.1.102

Mednick, S. A. (1968). The remote associates test. *Journal of Creative Behavior, 2,* 213–214.

Muraven, M., Shmueli, D., & Burkley, E. (2006). Conserving self-control

strength. *Journal of Personality and Social Psychology, 91,* 524–537. doi:10.1037/0022-3514.91.3.524

Muraven, M., & Slessareva, E. (2003). Mechanism of self-control failure: Motivation and limited resources. *Personality and Social Psychology Bulletin, 29,* 894–906. doi:10.1177/0146167203029007008

Overbeck, J. R., & Park, B. (2001). When power does not corrupt: Superior individuation processes among powerful perceivers. *Journal of Personality and Social Psychology, 81,* 549–565. doi:10.1037/0022-3514.81.4.549

Schmeichel, B. J., Vohs, K. D., & Baumeister, R. F. (2003). Intellectual performance and ego depletion: Role of the self in logical reasoning and other information processing. *Journal of Personality and Social Psychology, 85,* 33–46. doi:10.1037/0022-3514.85.1.33

Smith, P. K., & Bargh, J. A. (2008). Nonconscious effects of power on basic approach and avoidance tendencies. *Social Cognition, 26,* 1–24. doi:10.1521/soco.2008.26.1.1

Smith, P. K., Jostmann, N. B., Galinsky, A. D., & van Dijk, W. W. (2008). Lacking power impairs executive functions. *Psychological Science, 19,* 441–447. doi:10.1111/j.1467-9280.2008.02107.x

Smith, P. K., & Trope, Y. (2006). You focus on the forest when you're in charge of the trees: Power priming and abstract information processing. *Journal of Personality and Social Psychology, 90,* 578–596. doi:10.1037/0022-3514.90.4.578

Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups.* New York, NY: Wiley.

Tice, D. M., Baumeister, R. F., Shmueli, D., & Muraven, M. (2007). Restoring the self: Positive affect helps improving self-regulation following ego depletion. *Journal of Experimental Social Psychology, 43,* 379–384. doi:10.1016/j.jesp.2006.05.007

van Dijke, M., & Poppe, M. (2006). Striving for personal power as a basis for social power dynamics. *European Journal of Social Psychology, 36,* 537–556. doi:10.1002/ejsp.351

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

Van Vugt, M., Hogan, R., & Kaiser, R. (2008). Leadership, followership, and evolution: Some lessons from the past. *American Psychologist, 63,* 182–196. doi:10.1037/0003-066X.63.3.182

Vescio, T. K., Gervais, S. J., Snyder, M., & Hoover, A. (2005). Power and the creation of patronizing environments: The stereotype-based behaviors of the powerful and their effects on female performance in masculine domains. *Journal of Personality and Social Psychology, 88,* 658–672. doi:10.1037/0022-3514.88.4.658

Vescio, T. K., Snyder, M., & Butz, D. A. (2003). Power in stereotypically masculine domains: A social influence strategy × stereotype match model. *Journal of Personality and Social Psychology, 85,* 1062–1078. doi:10.1037/0022-3514.85.6.1062

Vohs, K. D., Baumeister, R. F., & Ciarocco, N. (2005). Self-regulation and self-presentation: Regulatory resource depletion impairs impression management and effortful self-presentation depletes regulatory resources. *Journal of Personality and Social Psychology, 88,* 632–657. doi:10.1037/0022-3514.88.4.632

Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. (2008). Making choices impairs subsequent self-control: A limited resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology, 94,* 883–898. doi:10.1037/0022-3514.94.5.883

Vohs, K. D., & Schmeichel, B. J. (2003). Self-regulation and the extended now: Controlling the self alters the subjective experience of time. *Journal of Personality and Social Psychology, 85,* 217–230. doi:10.1037/0022-3514.85.2.217

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070. doi:10.1037/0022-3514.54.6.1063

Weick, M., & Guinote, A. (2008). When subjective experiences matter: Power increases reliance on ease-of-retrieval. *Journal of Personality and Social Psychology, 94,* 956–970. doi:10.1037/0022-3514.94.6.956

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

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