

Psychological Science

<http://pss.sagepub.com/>

Power and Choice : Their Dynamic Interplay in Quenching the Thirst for Personal Control

M. Ena Inesi, Simona Botti, David Dubois, Derek D. Rucker and Adam D. Galinsky

Psychological Science published online 24 June 2011

DOI: 10.1177/0956797611413936

The online version of this article can be found at:

<http://pss.sagepub.com/content/early/2011/06/24/0956797611413936>

Published by:



<http://www.sagepublications.com>

On behalf of:



[Association for Psychological Science](http://www.sagepublications.com)

Additional services and information for *Psychological Science* can be found at:

Email Alerts: <http://pss.sagepub.com/cgi/alerts>

Subscriptions: <http://pss.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Power and Choice: Their Dynamic Interplay in Quenching the Thirst for Personal Control

Psychological Science
 XX(X) 1–7
 © The Author(s) 2011
 Reprints and permission:
sagepub.com/journalsPermissions.nav
 DOI: 10.1177/0956797611413936
<http://pss.sagepub.com>


M. Ena Inesi¹, Simona Botti², David Dubois³, Derek D. Rucker⁴, and Adam D. Galinsky⁵

¹Organisational Behaviour, London Business School; ²Marketing, London Business School; ³Marketing, HEC Paris;

⁴Marketing, Kellogg School of Management, Northwestern University; and ⁵Management and Organizations, Kellogg School of Management, Northwestern University

Abstract

Power and choice represent two fundamental forces that govern human behavior. Scholars have largely treated power as an *interpersonal* construct involving control over other individuals, whereas choice has largely been treated as an *intrapersonal* construct that concerns the ability to select a preferred course of action. Although these constructs have historically been studied separately, we propose that they share a common foundation—that both are rooted in an individual's sense of personal control. Because of this common underlying basis, we hypothesized that power and choice are substitutable; that is, we predicted that the absence of one would increase the desire for the other, which, when acquired, would serve to satisfy the broader need for control. We also predicted that choice and power would exhibit a threshold effect, such that once one source of control had been provided (e.g., power), the addition of the other (e.g., choice) would yield diminishing returns. Six experiments provide evidence supporting these predictions.

Keywords

control, power, choice, substitutability, threshold

Received 9/2/10; Revision accepted 3/21/11

Power and choice represent two important forces that govern many aspects of human behavior. Possessing power—relative control over other individuals or over valued resources in social relations (Magee & Galinsky, 2008)—has been shown to affect individuals' decision making (Anderson & Galinsky, 2006; Inesi, 2010), ability to take action (Galinsky, Gruenfeld, & Magee, 2003), focus on personal goals (Gruenfeld, Inesi, Magee, & Galinsky, 2008), and resistance to persuasion and conformity (Briñol, Petty, Valle, Rucker, & Becerra, 2007; Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). Similarly, having choice—the ability to select a preferred course of action (Averill, 1973)—also fundamentally affects individuals' psychology, from increasing positive affect and satisfaction (Langer, 1975; Langer & Rodin, 1976) to improving task persistence and cognitive performance (Cordova & Lepper, 1996; Zuckerman, Porac, Latin, Smith, & Deci, 1978).

Thus far, power and choice have occupied separate islands within the literature. Power has largely been conceptualized as an *interpersonal* construct involving relative dependence on and relative influence over other individuals (Emerson, 1962; Magee & Galinsky, 2008). In contrast, choice has typically

been conceptualized as an *intrapersonal* construct involving presence or absence of the ability to select paths and options (Averill, 1973).

Although these constructs are conceptually distinct, we propose that power and choice share a common attribute: They both satisfy the need for *personal control*, the belief that events are influenced by and contingent upon one's own behavior and not fate, circumstances, other people, or uncontrollable physical forces (de Charms, 1968; Rotter, 1966). Just as people strive to restore control when it is lost or threatened (Roth & Kubal, 1975), individuals who lack power seek to enhance their relative status (Rucker & Galinsky, 2008, 2009), and those whose choice is constrained engage in behaviors aimed at reinstating their freedom (Brehm, 1966; Fitzsimons, 2000).

The proposition that power and choice are both sources of personal control is consistent with past research. Power has

Corresponding Author:

M. Ena Inesi, London Business School, Organisational Behaviour, Regent's Park London, London NW14SA, United Kingdom
 E-mail: einesi@london.edu

been shown to make people believe they have control over all manner of resources and outcomes, including those that are determined by chance (Fast, Gruenfeld, Sivanathan, & Galinsky, 2009). Similarly, choice has long been used to provide personal control (Averill, 1973; Lefcourt, 1973). Although the exercise of choice allows individuals to experience a contingency between their actions and subsequent outcomes (Zuckerman et al., 1978), choice and control are separable both theoretically and empirically. A sense of control can be influenced by factors other than choice, such as involvement, predictability, and performance feedback (Langer, 1975; Miller, 1979; Whitson & Galinsky, 2008), and choice does not always provide a sense of control, for example, when the available options are undifferentiated or the choice is extrinsically motivated (Botti & McGill, 2006, 2011; Deci & Ryan, 1985).

Given that both power and choice can satisfy the basic human need for personal control, we make two novel hypotheses about their dynamic interplay. First, we propose that power and choice can act as substitutes for one another in providing a sense of personal control. Second, we hypothesize that power and choice exhibit a threshold effect in their ability to meet the need for control.

According to our *substitutability hypothesis*, when people are deprived of one source of personal control (e.g., power), they can seek out and satisfy the need for control through a separate source (e.g., choice). This notion of substitutability is compatible with past findings showing that people are quite flexible in utilizing different, interchangeable means of restoring motivational deficits (Baumeister & Leary, 1995). For example, because certainty and belongingness are two routes to satisfy the basic need for meaning, individuals who experience a threat to their sense of certainty show an increased tendency to demonstrate intergroup bias, favoring the in-group as a means of increasing belongingness (Heine, Proulx, & Vohs, 2006). Similarly, when the belief in an orderly and nonrandom world is threatened by either an unstable government or an experience of reduced personal control, people are more likely to endorse order-preserving religious institutions (Kay, Gaucher, Napier, Callan, & Laurin, 2008; Kay, Shepherd, Blatz, Chua, & Galinsky, 2010) and to perceive patterns in random data (Whitson & Galinsky, 2008) in an effort to restore a perception of order.

Our second hypothesis, the *threshold hypothesis*, refers to the diminished motivation that ensues when a basic need is already satisfied (Baumeister & Leary, 1995). We predicted that, just as people do not strive to maximize their sense of order (Kay et al., 2010), belongingness (Baumeister & Leary, 1995), or meaning (Heine et al., 2006), they do not strive to maximize their sense of personal control. Rather, people seek to maintain some ideal level. If power and choice are substitutable sources of personal control, then each may independently meet this required threshold: When one source of personal control (e.g., power) is available, additional sources of control (e.g., choice) will provide diminishing benefits, if any at all.

Thus, although power and choice differ strikingly in that the former is interpersonal and the latter is intrapersonal, they may have more in common than previously recognized, and joint research on power and choice can provide insight into the manner in which the need for control operates. At present, despite large literatures devoted separately to these two constructs, there is no empirical evidence that directly bears on our substitutability and threshold hypotheses.

We tested these hypotheses across six experiments. The first four experiments manipulated either power or choice and tested the substitutability hypothesis by measuring the desire for the other source of control. The last two experiments manipulated power and choice orthogonally to test both the substitutability and the threshold hypotheses. We tested the former via the ability of power and choice to provide a sense of personal control when the other was absent, and the latter via the relative impact of additional sources of personal control.

Experiments 1a and 1b: From Lacking Power to Desiring Choice

Experiments 1a and 1b tested our substitutability hypothesis by manipulating power and measuring desire for choice. We predicted that relative to high-power individuals, low-power individuals would want more choice, and therefore would prefer a larger over a smaller choice set (Experiment 1a) and would also demonstrate a greater motivation to access a larger, relative to a smaller, choice set (Experiment 1b).

Experiment 1a

Forty participants (22 males, 18 females; mean age = 32.37 years, $SD = 11.02$) were recruited from a U.S. online pool and participated in Experiment 1a in return for the chance to win a gift certificate. Participants were randomly assigned to a 2 (power: low, high) \times 4 (product type: candy, water, detergent, chips) mixed-model design with product type as a within-participants factor.

Power was manipulated by asking participants to recall a personal experience of either high or low power (Galinsky et al., 2003). Participants were then presented with a small assortment (3 options) and a large assortment (15 options) of each of the four product types; the order in which the product types were presented was counterbalanced. For each product type, participants indicated the assortment they preferred, using a 7-point scale (1 = *Assortment 1*, 4 = *I don't have a preference for either Assortment 1 or Assortment 2*, 7 = *Assortment 2*). The labels "Assortment 1" and "Assortment 2" were randomly assigned to the large and the small assortments for each product type; because labeling did not affect the results, responses were coded with higher numbers reflecting greater preference for the large assortment. Because product type did not interact with power condition, we collapsed the data across product types.

As predicted, low-power participants indicated a stronger preference for the large assortments than high-power participants did, $t(38) = 2.14$, $p = .04$, $d = 0.71$ (see Table 1 for means).

Experiment 1b

Forty-one undergraduates (18 males, 23 females; mean age = 20.51 years, $SD = 1.36$) were randomly assigned to the conditions in a 2 (power: low, high) \times 2 (scenario: eyeglasses, ice cream) mixed-model design, with scenario serving as a within-participants factor.

Power was manipulated by having participants read a description of either a low-power (employee) or a high-power (boss) individual and imagine how they would feel, think, and act in this role (see Dubois, Rucker, & Galinsky, 2010). Next, participants took part in an ostensibly unrelated study in which they were presented with two scenarios, one involving the purchase of eyeglasses, and the other involving the purchase of ice cream; each scenario involved deciding whether to make the purchase from a store offering a small assortment (3 options) or a store offering a large assortment (15 options). In the first scenario, the small-assortment store was 1 mile away, and the large-assortment store was further way. In the second scenario, the small-assortment store was open, and the large-assortment store was closed. Desire for a larger choice set was measured by, respectively, the number of miles participants were willing to drive and the number of minutes they were willing to wait to access the larger choice set. Given the open-ended nature of these measures, five data points fell more than 3 standard deviations from the mean and were excluded from the analysis.

A 2 (power) \times 2 (scenario) mixed-model analysis of variance (ANOVA) revealed only the predicted significant effect of power, $F(1, 34) = 5.88$, $p = .021$, $\eta^2_p = .15$. Low-power participants, compared with high-power participants, were willing to drive significantly further, $t(38) = 2.08$, $p = .04$, $d = 0.66$, and to wait significantly longer, $t(37) = 2.20$, $p = .03$, $d = 0.71$, to gain access to the larger choice set (see Table 1 for means).

Table 1. Mean Desire for Greater Choice as a Function of Power in Experiments 1a and 1b

Measure	Low power	High power
Preference for the larger assortment (Experiment 1a)	5.40 (0.99)	4.74 (0.97)
Willingness to drive further (miles) for the larger assortment (Experiment 1b)	10.21 (5.95)	6.40 (5.47)
Willingness to wait (minutes) for the larger assortment (Experiment 1b)	7.83 (3.60)	5.15 (2.87)

Note: Standard deviations are given in parentheses.

Across Experiments 1a and 1b, lacking power triggered a greater desire for choice. These experiments provide evidence that choice can substitute for a lack of power.

Experiments 2a and 2b: From Lacking Choice to Desiring Power

Experiments 2a and 2b tested the reverse direction of the substitutability hypothesis: whether lacking choice increases one's desire for power. We predicted that relative to individuals with more choice, those with less choice would desire more powerful jobs and place more importance on power-related job characteristics (Experiment 2a). In addition, because desiring power is associated with higher evaluations of products that signal status (Rucker & Galinsky, 2008, 2009), we predicted that individuals lacking choice would be more willing to pay for high-status products, but not low-status ones, and that a sense of personal control would mediate the relationship between availability of choice and willingness to pay for high-status products (Experiment 2b).

Experiment 2a

Fifty-two participants (25 males, 27 females; mean age = 20.38 years, $SD = 1.17$) were randomly assigned to a 2 (choice: low, high) \times 4 (product type: candy, water, detergent, chips) between-subjects design.

Participants imagined buying a particular product (candy, water, detergent, or chips). Participants in the *low-choice condition* chose one product from an assortment including 3 options. Those in the *high-choice condition* chose a product from an assortment with 15 options. Next, participants were told that they would take part in an ostensibly unrelated task that had two roles: boss and employee. After reading a short description of both roles, participants were asked how much they would like to occupy the role of boss, a measure of the need for power adapted from Smith, Wigboldus, and Dijksterhuis (2008). Finally, participants were asked to judge the importance to their dream job of characteristics that were either related to power (high position within the organization, control over the environment; $\alpha = .86$) or unrelated to power (friendly working atmosphere, interesting job; $\alpha = .84$).

Choice did not interact with product category, so we collapsed across the latter factor. Low-choice participants preferred the role of boss more than high-choice participants did, $t(51) = 2.68$, $p = .01$, $d = 0.76$. For the job-characteristic measures, a 2 (choice: low, high) \times 2 (type of characteristic: power relevant, power irrelevant) mixed-model ANOVA with repeated measures on the second factor revealed a significant interaction, $F(2, 50) = 4.08$, $p = .04$, $\eta^2_p = .08$. Whereas low-choice participants rated power-relevant characteristics as more important than high-choice participants did, $t(51) = 2.34$, $p = .02$, $d = 0.65$, there was no effect of choice condition on perceived importance of characteristics unrelated to power, $t < 1$ (see Table 2 for means).

Table 2. Mean Desirability of the Boss Role and Job Characteristics as a Function of Choice in Experiment 2a

Measure	Low choice	High choice
Liking of boss role	5.05 (1.38)	4.09 (1.14)
Importance of power-relevant job characteristics	5.29 (1.14)	4.39 (1.06)
Importance of power-irrelevant job characteristics	4.29 (1.12)	4.47 (1.18)

Note: Standard deviations are given in parentheses.

Experiment 2b

Sixty undergraduates (29 males, 31 females; mean age = 20.33 years, $SD = 1.73$) participated in Experiment 2b in exchange for \$12. This study had a 2 (choice: low, high) \times 2 (product status: low, high) between-participants design.

Upon their arrival in the lab, participants were told to imagine being at a store looking for a series of products to buy. They viewed sofas, washers, and dryers in the *low-status condition*, and silk ties, executive pens, and briefcases in the *high-status condition* (the order in which the product types were presented was counterbalanced within each condition). Participants in the *low-choice condition* read that the store's assortment included 3 options for each product type, whereas those in the *high-choice condition* read that the store had 15 options for each product type. Next, one item was ostensibly selected at random from each assortment, and participants were asked to indicate how much they were willing to pay for that item. In reality, the selected products were kept constant across conditions. Because the products were from a variety of price tiers, we used a 12-point scale with equal intervals (1 = 10% of the retail price, 12 = 120% of the retail price; Rucker & Galinsky, 2008). After completing the willingness-to-pay measure, participants reported the extent to which the assortment size affected the amount of control they had (1 = *not at all*, 9 = *extremely*).

We submitted participants' willingness to pay to a 2 (choice) \times 2 (product status) ANOVA. There was a significant Choice \times Product Status interaction, $F(1, 57) = 6.35, p = .01, \eta_p^2 = .10$. For low-status products, there was no difference in willingness to pay between the low- and high-choice conditions, $t(56) = 0.85, p = .397, d = -0.28$. However, there was a significant effect of choice condition for high-status products, $t(56) = 2.71, p = .009, d = 1.21$; participants shown the small assortments indicated a higher willingness to pay for the high-status product than did those who were shown the large assortments (see Table 3 for means).

A Choice \times Product Status ANOVA predicting feelings of control revealed only a significant main effect of choice, $F(1, 56) = 10.62, p = .002, \eta_p^2 = .16$. Participants in the low-choice condition reported feeling less control than those in the high-choice condition did (see Table 3 for means).

Table 3. Mean Willingness to Pay and Reported Feelings of Control as a Function of Choice and Product Status in Experiment 2b

Measure and product status	Low choice	High choice
Willingness to pay		
Low-status products	5.18 (1.68)	5.69 (2.01)
High-status products	4.20 (1.44)	2.58 (1.33)
Reported control		
Low-status products	4.27 (1.33)	5.53 (1.19)
High-status products	4.62 (1.42)	5.86 (1.06)

Note: Standard deviations are given in parentheses.

We predicted that the relationship between choice and willingness to pay for high-status products would be mediated by feelings of control. Thus, we regressed participants' willingness to pay for high-status products simultaneously on choice condition and feelings of control. Feelings of control significantly predicted willingness to pay, $\beta = -0.50, t(29) = -3.19, p < .01$, but the effect of choice condition on willingness to pay was reduced to marginal significance, $\beta = 0.28, t(29) = 1.82, p = .08$. To test whether the path through the mediator was significant, we constructed a 95% confidence interval (CI) for the indirect effect using bootstrapping procedures (Preacher, Rucker, & Hayes, 2007). Zero fell outside this interval (95% CI: [-0.951, -0.207]), which indicates that the indirect effect was significant. Furthermore, for low-status products, not only was there no effect of choice condition on willingness to pay, but the 95% CI for the indirect effect, [-0.106, 0.003], did include zero, which suggests that choice condition did not have an indirect effect through control condition on willingness to pay for low-status products.

Experiments 2a and 2b demonstrated that limited choice increases desire for power. Study 2b further established the mediating role of personal control in this substitutability effect. These studies demonstrate that acquiring power can substitute for lacking choice.

Experiments 3a and 3b: Substitutes and Thresholds

The first four experiments provided evidence that power and choice can act as substitutes for one another. In our final two experiments, we had two main objectives. First, we wanted to test the substitutability hypothesis further. According to our theory, power and choice can substitute for one another because they both represent sources of personal control. Thus, if individuals are deprived of one source (e.g., power), then experiencing another source (e.g., choice) should reduce this sense of deprivation. Second, Experiments 3a and 3b tested the hypothesis that power and choice exhibit a threshold effect in satisfying the need for personal control. If power and choice are substitutable sources of personal control, then it is possible that possessing either one is enough to meet the necessary threshold, and that having both will provide diminishing benefits.

Experiment 3a

Prior research has shown that participants who are depleted of control expend more effort on subsequent cognitive tasks in an attempt to restore control (Pittman, 1998; Roth & Kubal, 1975; Thornton & Jacobs, 1972). Thus, we manipulated power and choice orthogonally and assessed participants' motivation to restore control by measuring their effort at solving an anagram task. We predicted that participants who lacked both sources of control would persist longer on the task than would those who had either power or choice (the substitutability hypothesis). Further, we predicted that adding a second source of control would provide only marginal or no benefit and therefore would have little additional effect on persistence (the threshold hypothesis).

One hundred ten students (44 males, 66 females; mean age = 22.48 years, $SD = 5.39$) were recruited from a participant pool and paid £10 to participate in a series of studies, including Experiment 3a, which had a 2 (power: low, high) \times 2 (choice: low, high) between-participants design. Participants were randomly assigned to a low-power ("employee") or a high-power ("boss") role. They read a brief description of their hypothetical role in a company and engaged in a role-appropriate task (they evaluated the suitability of their office—large and opulent for bosses, small and plain for employees—after viewing a floor plan and a photo of the interior decoration). Next, participants were told that the company's catering staff was conducting a survey regarding cookie options. Participants were shown either two (*low choice*) or eight (*high choice*) cookies and could select one to eat. The last task was described as simulating a challenging situation at work and consisted of unscrambling six anagrams, all of which contained seven letters and were, in reality, unsolvable. Challenging cognitive tasks have been used in the past to measure persistence (Roth & Bootzin, 1974; Roth & Kubal, 1975). Our main dependent measure was time spent attempting to solve the anagrams.

A 2 (power) \times 2 (choice) ANOVA on total time spent on the anagram task revealed a significant main effect of choice, $F(1, 106) = 6.61, p = .012, \eta^2 = .06$, and a significant interaction, $F(1, 106) = 3.80, p = .054, \eta^2 = .04$. As predicted by the substitutability hypothesis, participants who had neither power nor choice persisted longer than did those who were given either power or choice, $t(106) = 2.81, p = .006, d = 0.61$. As predicted by the threshold hypothesis, there were no differences in persistence between participants who had one source of control (either power or choice) and those who had two sources of control (power and choice), $t < 1$ (see Table 4 for means).

Experiment 3b

Prior research has shown that when choice provides a sense of control, the act of choosing (vs. not choosing) increases satisfaction with the decision outcome (Botti & McGill, 2011; Deci & Ryan, 1985; Zuckerman et al., 1978). If power and choice can act as substitutes for one another in providing a sense of

Table 4. Time Spent (in Seconds) on the Anagram Task as a Function of Power and Choice in Experiment 3a

Choice	Low power	High power
Low choice	576.43 (380.80)	453.72 (275.60)
High choice	326.84 (185.70)	419.38 (264.48)

Note: Standard deviations are given in parentheses.

control, then participants who have control through either of these sources should be more satisfied with the outcome of a decision than participants who have no source of control (neither power nor choice) are. In addition, if the need for control has a threshold, then there should be little to no difference in satisfaction between participants with either power or choice and those with both power and choice.

Eighty-six adults (16 males, 70 females) with a mean age of 41.17 years ($SD = 14.75$) were recruited from an online pool to participate in Experiment 3b. The experiment had a 2 (power: baseline, high) \times 2 (choice: no choice, choice) between-participants design.

Participants were first randomly assigned to a power condition. Participants in the *baseline condition* were asked to recall their previous day (Galinsky et al., 2003), whereas those in the *high-power condition* completed the high-power recall task from Experiment 1a.

An ostensible second study manipulated the choice process. Participants were asked to imagine dining with a friend at a famous nouvelle cuisine restaurant and reading the restaurant's menu, which listed four appetizers, four entrées, and four desserts. Participants in the *choice condition* selected one appetizer, one entrée, and one dessert, whereas those in the *no-choice condition* were told that because it was Surprise Night at the restaurant, their appetizer, entrée, and dessert would be selected at random for them by a computer. To control for menu selection across conditions, we used a yoking procedure, such that each participant in the no-choice condition was assigned the selections of a participant in the choice condition. Participants then answered three questions about how much they liked, enjoyed, and were satisfied with the meal. All measures used a 5-point scale from 1, *not at all*, to 5, *a great deal*. We combined the three items into a measure of attitude toward the meal ($\alpha = .97$).

A 2 (power) \times 2 (choice) ANOVA on participants' attitude toward the meal revealed a main effect of choice, $F(1, 82) = 11.82, p = .001, \eta^2 = .13$, and an interaction, $F(1, 82) = 9.12, p = .003, \eta^2 = .10$. Results provided further support for the substitutability hypothesis: Participants who had neither power nor choice had less positive attitudes toward the meal than did participants who had either power or choice, $t(82) = -4.09, p < .001, d = -0.60$ (see Table 5 for means). Results also provided additional support for the threshold hypothesis: There were no differences in satisfaction between participants

Table 5. Satisfaction as a Function of Power and Choice in Experiment 3b

Choice	Baseline	High power
No choice	2.89 (1.14)	3.65 (0.72)
Choice	4.17 (0.58)	3.73 (1.06)

Note: Standard deviations are given in parentheses.

who had one source of control (either power or choice) and those who had two sources of control (power and choice), $t < 1$ (see Table 5 for means).

Experiments 3a and 3b demonstrated that lacking both power and choice is an unsatisfying state, but having at least one source of control—choice or power—is enough to decrease compensatory persistence and increase satisfaction. Once the need for control met a sufficient threshold, more control provided little additional benefit.

General Discussion

Across six experiments, we found consistent evidence for the substitutability of power and choice: Choice and power can stand in for one another in providing the foundational need for control. In the first four experiments, when participants were placed into a state of low power, they desired more choice (Experiments 1a and 1b), and when participants were given little choice, they desired more power (Experiment 2a and 2b). The last two experiments found that as long as one source of control was present, participants were less motivated to restore control through task persistence (Experiment 3a) and were more satisfied with the outcome of a selection process (Experiment 3b).

The last two studies also provided support for a threshold effect in the need for control: Creating more control beyond the threshold, through additional sources, produces diminishing returns. Having two sources of control (power and choice) added no benefit over having only one source of control (power or choice).

These findings have important implications that span the power and choice literatures. Although power has been defined at the interpersonal level and choice at the intrapersonal level, the present findings demonstrate that taking into account their common roots in personal control can lead to novel insights into the behavior of people experiencing a lack of power or choice. People compensate for low power by seeking out greater choice, and people compensate for a lack of choice by seeking out jobs or products that are associated with power. These findings also contribute to the literature on personal control, by showing that different sources of control can be interchangeable and that control does not need to be maximized via all possible sources, but rather that the need for control can be satiated through one source.

This research suggests that if either power or choice is taken away from individuals, they might be buffered from a negative reaction if provided the other source of personal control. Although we have focused on power and choice, we predict that a similar dynamic would likely emerge among other sources of control. This does not mean that any threat can be addressed by seeking control; rather, it is likely that any threat to feelings of control is capable of being assuaged through a variety of actions associated with control.

Control is a central animating force in human behavior, and it operates much like thirst. The need to drink emerges only when water levels are depleted, it can be satiated through taking in a variety of fluids, and once one has drunk enough, there is no further benefit from drinking in greater quantities or from different sources. As the current studies demonstrate, power satisfies the thirst for choice, and choice quenches the desire for power, because each replenishes a sense of control.

Acknowledgments

The first two authors contributed equally.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Funding

The Centre for Marketing at London Business School and the Richard M. Clewett Professorship, Kellogg School of Management, Northwestern University, provided financial support for this work.

References

- Anderson, C., & Galinsky, A. D. (2006). Power, optimism, and risk-taking. *European Journal of Social Psychology, 36*, 511–536.
- Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin, 80*, 286–303.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachment as a fundamental human motivation. *Psychological Bulletin, 117*, 497–529.
- Botti, S., & McGill, A. L. (2006). When choosing is not deciding: The effect of perceived responsibility on satisfaction. *Journal of Consumer Research, 33*, 211–219.
- Botti, S., & McGill, A. L. (2011). The locus of choice: Personal causality and satisfaction with hedonic and utilitarian decisions. *Journal of Consumer Research, 37*, 1065–1078.
- Brehm, J. W. (1966). *A theory of psychological reactance*. New York, NY: Academic Press.
- Briñol, P., Petty, R. E., Valle, C., Rucker, D. D., & Becerra, A. (2007). The effects of message recipients' power before and after persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 93*, 1040–1053.
- Cordova, D. I., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology, 88*, 715–730.

- de Charms, R. (1968). *Personal causation: The internal affective determinants of behavior*. New York, NY: Academic Press.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press.
- Dubois, D., Rucker, D. D., & Galinsky, A. D. (2010). The accentuation bias: Money literally looms larger (and sometimes smaller) to the powerless. *Social Psychological and Personality Science*, 1, 199–205.
- Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review*, 27, 31–40.
- Fast, N. J., Gruenfeld, D. H., Sivanathan, N., & Galinsky, A. D. (2009). Illusory control: A generative force behind power's far-reaching effects. *Psychological Science*, 20, 502–508.
- Fitzsimons, G. J. (2000). Consumer response to stockouts. *Journal of Consumer Research*, 27, 249–266.
- Galinsky, A. D., Gruenfeld, D. H., & Magee, J. C. (2003). From power to action. *Journal of Personality and Social Psychology*, 85, 453–466.
- Galinsky, A. D., Magee, J. C., Gruenfeld, D. H., Whitson, J., & Liljenquist, K. A. (2008). Power reduces the press of the situation: Implications for creativity, conformity, and dissonance. *Journal of Personality and Social Psychology*, 95, 1450–1466.
- Gruenfeld, D. H., Inesi, M. E., Magee, J. C., & Galinsky, A. D. (2008). Power and the objectification of social targets. *Journal of Personality and Social Psychology*, 95, 111–127.
- Heine, S. J., Proulx, T., & Vohs, K. D. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review*, 10, 88–110.
- Inesi, M. E. (2010). Power and loss aversion. *Organizational Behavior and Human Decision Processes*, 112, 58–69.
- Kay, A. C., Gaucher, D., Napier, J. L., Callan, M. J., & Laurin, K. (2008). God and the government: Testing a compensatory control mechanism for the support of external systems. *Journal of Personality and Social Psychology*, 95, 18–35.
- Kay, A. C., Shepherd, S., Blatz, C. W., Chua, S. N., & Galinsky, A. D. (2010). For God (or) country: The hydraulic relation between government instability and belief in religious sources of control. *Journal of Personality and Social Psychology*, 99, 725–739.
- Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311–328.
- Langer, E. J., & Rodin, J. (1976). The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology*, 34, 191–198.
- Lefcourt, H. M. (1973). The function of the illusions of control and freedom. *American Psychologist*, 28, 417–425.
- Magee, J. C., & Galinsky, A. D. (2008). Social hierarchy: The self-reinforcing nature of power and status. *Academy of Management Annals*, 2, 351–398.
- Miller, S. M. (1979). Controllability and human stress: Methods, evidence and theory. *Behavioral Research and Therapy*, 17, 287–304.
- Pittman, T. S. (1998). Intrapsychic and interpersonal processes: Cognition, emotion and self as adaptations to other people or to reality? In J. M. Darley & J. Cooper (Eds.), *Attribution and social interaction: The legacy of Edward E. Jones* (pp. 235–242). Washington, DC: American Psychological Association.
- Preacher, K. J., Rucker, D. D., & Hayes, A. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185–227.
- Roth, S., & Bootzin, R. R. (1974). Effects of experimentally induced expectancies of external control: An investigation of learned helplessness. *Journal of Personality and Social Psychology*, 29, 253–264.
- Roth, S., & Kubal, L. (1975). Effects of noncontingent reinforcement on tasks of differing importance: Facilitation and learned helplessness. *Journal of Personality and Social Psychology*, 32, 680–691.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80, 1–28.
- Rucker, D. D., & Galinsky, A. D. (2008). Desire to acquire: Powerlessness and compensatory consumption. *Journal of Consumer Research*, 35, 257–267.
- Rucker, D. D., & Galinsky, A. D. (2009). Conspicuous consumption versus utilitarian ideals: How different levels of power shape consumption. *Journal of Experimental Social Psychology*, 45, 549–555.
- Smith, P. K., Wigboldus, D. H. J., & Dijksterhuis, A. (2008). Abstract thinking increases one's sense of power. *Journal of Experimental Social Psychology*, 44, 378–385.
- Thornton, J. W., & Jacobs, P. D. (1972). The facilitating effects of prior inescapable unavoidable stress on intellectual performance. *Psychonomic Science*, 26, 185–187.
- Whitson, J. A., & Galinsky, A. D. (2008). Lacking control increases illusory pattern perception. *Science*, 322, 115–117.
- Zuckerman, M., Porac, J., Latin, D., Smith, R., & Deci, E. L. (1978). On the importance of self-determination for intrinsically-motivated behavior. *Personality and Social Psychology Bulletin*, 4, 443–446.