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The Accentuation Bias: Money Literally Looms Larger (and Sometimes Smaller) to the Powerless

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David Dubois[1], Derek D. Rucker[1], and Adam D. Galinsky[1]

Abstract

The present research explores how people's place in a power hierarchy alters their representations of valued objects. The authors hypothesized that powerlessness produces an accentuation bias by altering the physical representation of monetary objects in a manner consistent with the size-to-value relationship. In the first three experiments, powerless participants, induced through episodic priming or role manipulations, systematically overestimated the size of objects associated with monetary value (i.e., quarters, poker chips) compared to powerful and baseline participants. However, when value was inversely associated with size (i.e., smaller objects were more valuable), the powerless drew these valued objects smaller, not larger. In addition, the accentuation bias by the powerless was more pronounced when the monetary value associated with the object was greater, increased when the object was physically present, and was mediated by differences in subjective value. These findings suggest that powerlessness fosters compensatory processes that guide representations of valued objects.

Keywords

power, social hierarchies, value perception, money

More than 60 years ago, Bruner and Goodman (1947) offered a provocative hypothesis: Ingrained differences stemming from one's social class alter representations of reality. In their study, children low in socioeconomic status systematically overestimated the size of coins compared to children high in socioeconomic status. One unanswered question is whether their pattern arose not just from an actual deprivation of resources but also from socioeconomic status as a fundamental form of social hierarchy.

Although stable differences in socioeconomic status represent one form of hierarchy, one's place in a social hierarchy can also result from one's temporary and immediate control over resources or others. The current research examines how experimentally manipulated differences in a power-based hierarchy affect people's representations of monetary objects. Specifically, we propose that lacking power fosters compensatory processes that produce an accentuation bias, altering the representation of monetary objects in a manner consistent with the size-to-value relationship. When larger is considered more valuable, the powerless, relative to having power or baseline conditions, will inflate the size of monetary objects. However, when smaller becomes more valued, the powerless will represent objects of value as smaller than they actually are.

Power as a Form of Social Hierarchy

Defined as asymmetric control over other people or valued resources, power is a foundational basis of social hierarchy (Magee & Galinsky, 2008). Because hierarchy is the most prevalent form of social organization (Leavitt, 2004; Sidanius & Pratto, 1999), one's current position in a power hierarchy affects numerous psychological processes related to how people think (Briñol, Petty, Valle, Rucker, & Becerra, 2007; Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008; Smith & Trope, 2006), feel (Anderson & Galinsky, 2006; Guinote, 2007), and behave (Galinsky, Magee, Inesi, & Gruenfeld, 2006; Keltner & Robinson, 1997; Magee, Galinsky, & Gruenfeld, 2007; Rucker & Galinsky, 2008, 2009) in important domains spanning from negotiation to consumption. The pervasiveness of hierarchy also explains why the psychological experiences of power and powerlessness are so easily activated, either by randomly assigning people to high- and low-power roles or through episodic and semantic priming (Chen, Lee-Chai, & Bargh, 2001; Galinsky, Gruenfeld, & Magee, 2003; Guinote, 2007; Lammers, Galinsky, Gordijn, & Otten, 2008; Smith & Trope, 2006).

[1] Northwestern University, Evanston, IL, USA

Corresponding Author:
David Dubois, Northwestern University, Kellogg School of Management, 2001 Sheridan Road, Evanston, IL 60208
Email: duboisd@kellogg.northwestern.edu

Powerlessness and the Accentuation Bias

Our hypothesis is that the psychological effects of being placed lower in the social hierarchy permeate into individuals' most basic mental representations of valued objects. Specifically, powerlessness is proposed to create an accentuation bias where the subjective value of monetary items is intensified and representations of those items are distorted in the direction of the size-to-value relationship. As a result, momentary states of power might exert similar representational biases as ingrained differences in social status (Bruner & Goodman, 1947).

Our powerlessness-induced accentuation bias hypothesis builds off research showing that being powerless is often an aversive state that impinges on individuals' psychological and material well-being (Keltner, Gruenfeld, & Anderson, 2003; Smith, Jostmann, Galinsky, & van Dijk, 2008). Because of its aversive nature, individuals often seek to restore power. For example, Rucker and Galinsky (2008, 2009) found that people compensate for lacking power by redirecting the resources they do control (e.g., money) toward acquiring high-status (but not neutral or low-status) objects, especially when the product's status is visible and conspicuous. By purchasing and displaying high-status goods, the powerless hope to signal and possibly achieve higher standing in a social hierarchy.

A separate literature suggests that momentary physiological or psychological states can alter individuals' mental representations and interpretation of their environment (Atkinson & McClelland, 1948; Balcetis & Dunning, 2006). For example, individuals given a reward for seeing certain objects are more likely to see images in ambiguous objects related to that reward (Balcetis & Dunning, 2006).

Integrating these literatures, we propose and test the following novel hypothesis: Lacking power will affect individuals' representation of valued resources, such as money. As noted, powerlessness fosters compensatory processes that affect the value placed on objects capable of reducing this state (e.g., Rucker & Galinsky, 2008, 2009). Because money is often associated with control of resources, status, and independence (Vohs, Mead, & Goode, 2006), it should be particularly valued by the powerless. And because of the prevailing association in Western culture of ''larger'' with ''better'' or ''of greater value'' (Barthes, 1964; Baudrillard, 1998, 2005) that generally pervades the U.S. monetary system (Furnham & Argyle, 1998), we predict that the compensatory processes that increase the psychological value of money will also lead the powerless to physically represent money as larger. In short, money will literally loom larger for the powerless.

However, central to our perspective and proposed accentuation bias, representations should be distorted in the direction of the size-to-value relationship. If smaller implies greater value, the powerless should perceive valued objects as even smaller than they actually are. In these situations, monetary objects will still be more valued but their representations will be distorted to be smaller than a valued object actually is.

Overview of Experiments

We conducted four experiments to test our proposed accentuation bias by the powerless. The first experiment examines whether powerless individuals draw a monetary object (i.e., a quarter) larger compared to powerful and baseline participants (Experiment 1), and subsequent experiments establish that this basic effect occurs regardless of the power manipulation (episodic priming, role manipulation). We also establish the important role of subjective value by demonstrating that this accentuation bias by the powerless occurs only when the object is associated with value (Experiment 2), is stronger when the object is salient and physically present (Experiment 2), increases as a function of the value attached to the object (Experiments 3), and is mediated by changes in subjective value (Experiment 4). Finally, the last experiment also finds that when smaller is considered more valuable, the powerless represent valued objects smaller.

Experiment 1: Demonstrating the Accentuation Bias

Method

A total of 61 undergraduates (30 males and 31 females) were randomly assigned to a three-cell (power: high, low, baseline) between-participant design. We manipulated power by asking participants to imagine they were either a boss who was in charge of employees (high power) or an employee who had to follow the orders of a boss (low power; see Galinsky et al., 2003, for a conceptually similar manipulation). Importantly, we removed the portion of the original Galinsky et al. (2003) manipulation mentioning that the boss (employee) would monetarily reward the employees (receive a reward by the boss), as this might have led participants to think differently about present and future monetary resources. Participants in the baseline condition did not engage in this task.

Next, in an ostensibly different task, participants were asked to draw a quarter as accurately as possible from memory. We measured the diameter of the drawn quarter in centimeters, for which the actual size is 2.426 cm.

Results and Discussion

A one-way ANOVA revealed a significant effect of power, $F(1, 59) = 6.33$, $p = .01$, $\eta_p^2 = .18$.[1] Participants in the low-power condition ($M = 3.23$, $SD = 0.41$) drew the quarter larger compared to high-power ($M = 2.81$, $SD = 0.43$), $t(59) = 3.23$, $p < .01$, $d = 0.99$, and baseline participants ($M = 2.85$, $SD = 0.38$), $t(59) = 2.92$, $p < .01$, $d = 0.96$. Quarters drawn by participants in the high-power and baseline conditions did not differ, $t < 1$. The results provide clear support for a power-induced accentuation bias. In addition, given there were no differences between high-power and baseline conditions, this experiment suggests that the locus of the effect is driven by lacking as opposed to having power.

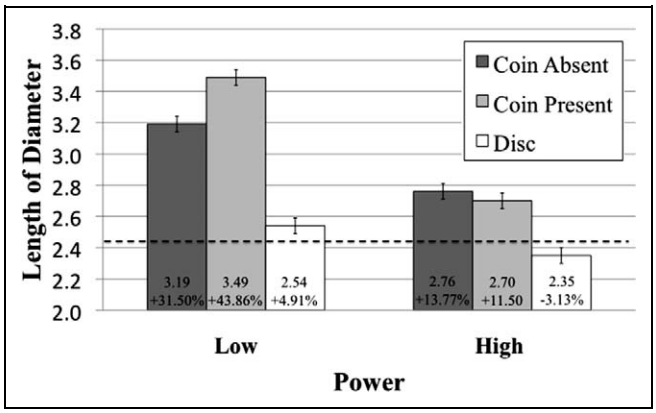

Figure 1. Length of diameter as a function of power and task with percentages reflecting the size of the inflation relative to the object's true diameter (2.426 cm; specified at the dotted line), Experiment 2
Note: Error bars represent ± 1 SEM.

Experiment 2: General or Value-Driven Accentuation?

An alternative explanation of Experiment 1 is that powerlessness leads to an overestimation of any object, even ones divorced from monetary value. Indeed, because feeling powerless induces a need to restore one's power and higher power is often equated with greater size (Schubert, Waldzus, & Giessner, 2009) or height (Dannenmaier & Thumin, 1964), one might hypothesize that the powerless have a tendency to view *all* objects as larger, regardless of their inherent value. To assess this possibility, Experiment 2 included an object of identical size to a quarter that had no inherent value (i.e., a blank disc).

In addition, we also manipulated whether the coin was present or absent. Because prior research has shown that the mere physical presence of a valued object can increase its desirability (e.g., Bruner & Goodman, 1947; Hill & Buss, 2008), we predicted that powerlessness would produce a stronger accentuation bias when the coin was physically present as opposed to absent.

Method

Randomly assigned to a 2 (power: high, low) × 3 (task: quarter absent, quarter present, disc present) between-participant design were 57 males and 63 females. Power was manipulated by asking participants to write about a time they either had or lacked power (Galinsky et al., 2003). Next, in the quarter-absent condition, participants drew a quarter as accurately as possible from memory, identical to Experiment 1. Participants in the quarter-present condition drew a quarter while holding a quarter in their nondominant hand behind their back (so that they could feel it but not see it). Last, participants in the disc-present condition were presented with a disc of identical size to a quarter, which was placed in their nondominant hand behind their back, and drew it. We measured the diameter of the drawn object.

Results and Discussion

Two main effects, of power, $F(1, 114) = 30.52$, $p = .01$, $\eta_p^2 = .21$, and task, $F(1, 114) = 21.97$, $p = .01$, $\eta_p^2 = .28$, were qualified by a significant power × task interaction, $F(1, 114) = 4.06$, $p = .02$, $\eta_p^2 = .07$ (Figure 1). Across both the coin-present and coin-absent conditions, the accentuation bias was significantly more pronounced among low-power compared to high-power participants, $t(79) = 6.26$, $p = .001$, $d = 1.27$. In addition, low-power participants drew a bigger quarter when holding it than when it was absent, $t(119) = 2.04$, $p = .04$, $d = 0.69$, whereas high-power participants drew quarters of identical size in the present and absent conditions ($p = .71$, $d = 0.11$). When drawing the disc, however, neither high-power participants, $t(19) = -0.71$, $p = .48$, $d = 0.32$, nor low-power ones, $t(19) = 1.27$, $p = .22$, $d = 0.58$, drew the object as significantly different from the actual size of the disc. In addition, the size of high- and low-power participants' drawings of the disc did not differ ($p = .19$). Of most importance, low-power participants in both the quarter absent condition, $t(19) = 4.25$, $p < .001$, $d = 1.95$, and the quarter present condition, $t(19) = 6.10$, $p < .001$, $d = 2.79$, differed from low-power participants in the disc condition.

These results suggest the accentuation bias is specific to objects associated with value as blank discs were drawn similarly by both powerful and powerless participants. In addition, the accentuation bias was even stronger when the quarter was salient (i.e., held in their hand).

Experiment 3: Same Poker Chip, Different Values

Experiment 3 sought further evidence that the observed accentuation bias is tied to the value of the object by testing whether the accentuation bias is moderated by the amount of value attached to the object. We predicted that identically sized poker chips stamped with $1, $10, and $100 values should be represented as increasingly larger by the powerless but not by the powerful. In addition, to converge on the notion that one's current place in a social hierarchy alters one's representation of value, we used a real manipulation of hierarchical power in which participants were assigned to the role of boss or employee during a group task.

Method

Randomly assigned to a 2 (power: high, low) × 3 (value: $1, $10, $100) between-participant design were 90 undergraduates (49 females and 41 males).

Participants were told they would serve either as a boss who was in charge of employees (high power) or as an employee who would follow the orders of a boss (low power) in a task later in the experimental session (Galinsky et al., 2003). Next, for an ostensibly different study, participants were given a poker chip embossed with one of three values ($1, $10, $100). All poker chips were identical in size. Participants were

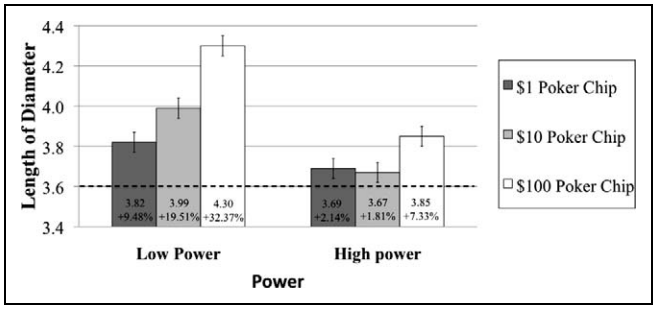

Figure 2. Length of diameter as a function of power and value with percentages reflecting the size of the inflation relative to the object's true diameter (3.6 cm; see dotted line), Experiment 3
Note: Error bars represent ± 1 SEM.

told to examine the chip carefully, place it in their nondominant hand behind their back, and draw the chip with their dominant hand.

Results and Discussion

There was a main effect of power, $F(1, 86) = 35.11$, $p = .01$, $\eta_p^2 = .29$, and a main effect of value, $F(1, 86) = 7.75$, $p = .01$, $\eta_p^2 = .16$. More importantly, there was a significant power × value interaction, $F(1, 86) = 3.47$, $p = .04$, $\eta_p^2 = .08$. The diameter of high-power participants' drawing did not differ as a function of value condition, $F(1, 44) = 0.56$, $p = .57$, $\eta_p^2 = .03$, but low-power participants' diameter length did, $F(1, 44) = 11.11$, $p = .01$, $\eta_p^2 = .34$ (see Figure 2). Low-power participants drew the $10 poker chip larger than the $1 chip, $t(89) = 4.82$, $p = .01$, $d = 0.80$, and the $100 poker chip was drawn larger than the $10 one, $t(89) = 4.76$, $p = .01$, $d = 0.96$, consistent with our hypothesis that subjective value drives the accentuation bias.

Experiment 4: What If Smaller Is of Greater Value?

The previous findings are consistent with a norm in Western cultures associating "bigger" with "better" or "of greater value" (Barthes, 1964; Baudrillard, 1998, 2005). That is, people's lay theories of value in Western cultures appear to be disposed to the notion that tall buildings and wide gardens are more valuable than short buildings and narrow gardens. In prior experiments, participants dealt with a monetary system reflecting a positive relationship between money and size (Experiment 1 and 2) or with a relationship that was not made explicit (poker chips of the same size in Experiment 3).

According to our theorizing, if smaller is an indicator of greater value, the powerless should draw an object smaller. In Experiment 4, we tested this idea by examining our effect in a context where size was negatively correlated with value. Specifically, we familiarized participants with new monetary objects (rectangular tokens) associating greater value with smaller physical size and then had them draw one of these objects.

Finally, we proposed that the distortions of physical representations might stem from a shift in subjective value of the object by the powerless, and thus we measured subjective value and tested for mediation in Experiment 4.

Method

Involved in a 3-week business simulation game were 66 participants (34 females and 32 males). As part of this game, participants bargained during six sessions (12 hours total) with a "novel" currency that had a negative size-to-value relationship (the smaller, the more valuable: three rectangular tokens, valued 10: 2.2 cm × 5.5 cm; 100: 1.6 cm × 4.2 cm; or 500: 1.2 cm × 3.4 cm).

At the beginning of the sixth session, we randomly assigned participants to complete a short questionnaire. First, participants were visually reminded about the different tokens they used as a means of exchange. Specifically, the very first page of the questionnaire mentioned, "As you may remember, these were the tokens you used so far in your transactions," and provided sized pictures of the three tokens below, clearly highlighting the size-to-value relationship of this monetary token. Next, all participants completed the power manipulation from Experiment 1. Subsequently, participants were instructed to draw accurately a 100 token, without having the opportunity to see one. We assessed the subjective value of the token by asking participants, "How valuable is this object to you in the simulation?" on a 9-point scale anchored at 1 (*not valuable at all*) and 9 (*very valuable*). We measured the diagonal of the drawn token in centimeters, with the actual diagonal being 4.5 cm.

Results and Discussion

Power affected the length of the diagonals of participants' tokens, $F(1, 65) = 4.08$, $p = .04$, $\eta_p^2 = .06$, such that low-power participants drew the token smaller ($M = 4.06$, $SD = 0.61$) than high-power participants ($M = 4.38$, $SD = 0.65$). In fact, low-power participants drew the token significantly smaller than the actual size of the object, $t(33) = –4.04$, $p = .01$, $d = 1.02$, whereas the token drawn by powerful ones did not differ from the actual size ($p = .32$, $d = 0.26$). Furthermore, low-power participants reported the token was of greater value to them ($M = 4.18$, $SD = 1.70$) compared to high-power participants ($M = 2.97$, $SD = 1.61$), $t(64) = 2.97$, $p = .01$, $d = 0.73$.

To test for mediation, power was dummy coded with 0 = *low power* and 1 = *high power*. When both power and subjective value were entered into the regression, power no longer predicted size, $\beta = .13$, $t(63) = 1.06$, $p = .29$, whereas subjective value did, $\beta = –.32$, $t(63) = –2.63$, $p = .01$ (see Figure 3). A significant Sobel test ($Z = 1.97$, $p = .04$) provided evidence that changes in subjective value underlie the accentuation bias by the powerless. In addition, a reverse mediation analysis with changes in size predicting subjective value was not significant (Sobel test $Z = 1.26$, $p > .2$).

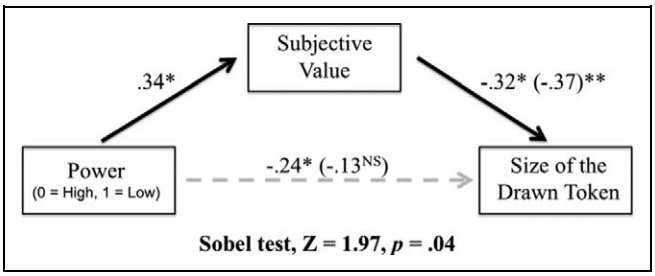

Figure 3. Mediation of the effect of power on size of drawn token by subjective value, Experiment 4

General Discussion

Four experiments established robust evidence of a power-induced accentuation bias. Across the first three experiments, regardless of the power manipulation (episodic priming, role manipulation) and the nature of the monetary items (coins, chips, tokens), the powerless consistently overestimated the physical size of objects associated with monetary value. We demonstrated the underlying role of subjective value through moderation, by manipulating the value associated with the object (Experiments 2 and 3), and then through mediation, by measuring subjective value (Experiment 4).

Contributions

The present research makes several notable contributions. First, it suggests not only that states of powerlessness lead individuals to reallocate their resources in a compensatory fashion to restore their lost sense of power (Rucker & Galinsky, 2008, 2009) but also that such states shift the very representation of valued objects. A related contribution of these findings is that they suggest not only that it is the case that states of high power have unique effects relative to low power and baseline, on which most work has focused so far (e.g., Galinsky et al., 2003; Galinsky et al., 2006; Smith & Bargh, 2008; Weick & Guinote, 2008), but also that low power can have unique effects relative to high power and baseline (e.g., Rucker & Galinsky, 2008; Smith et al., 2008).

Second, this work adds to the classic ''new look'' research by demonstrating temporary psychological states alter the representation of monetary objects similar to the ingrained difference in socioeconomic status found in past research (Bruner & Goodman, 1947) or actual deprivation (Atkinson & McClelland, 1948). Importantly, although past efforts have focused on how the strength of one's motivation affect the degree of distortion (e.g., the hungrier one is the more likely food is to be seen in ambiguous stimuli), the present work documents that biases in people's representations are also affected by the degree of value attached to the stimuli. The powerless not only inflate the size of monetary objects, but they inflate it in a relative sense (i.e., a $100 poker chip is drawn bigger than a $10 poker chip). Also important, we not only show when accentuation produces an increase in size but also provide evidence for a reversal.

Overall, we provide evidence that the relationship between size and value within a cultural system (Baudrillard, 2005) can shape individuals' representations of the objects pertaining to this system (i.e., money). As social animals, humans build up cultural systems of objects that serve various social purposes, including exchanging goods, communicating, and reinforcing the social hierarchy (Baudrillard, 1998, 2005). Although some of these cultural systems favor a positive relationship between size and value (e.g., the U.S. monetary systems, the housing system that associates greater space with greater value; Baudrillard, 1998), other systems forge a negative association between size and value (e.g., primitive monetary systems [Lecomte-Collin & Collin, 2004] or technological goods such as cell phones, microprocessors, and nanotechnologies). Our accentuation bias model makes it possible to predict the direction of one's representational distortion based on the natural size-to-value relationship of the category. A powerless individual will thus tend to represent a desired house as larger because the size-to-value relationship of the housing category is positive (the bigger the better) but would tend to represent a desired cell phone smaller because the size-to-value relationship of the cell phone category is negative (the smaller the better). Taking the size-to-value relationship into account might help policy makers to understand what drives the misrepresentation of valued objects and improve the design policies aiming to account for these misrepresentations.

Future Directions

One might wonder whether the accentuation bias results from a motivation by the powerless to compensate for a lack of power or if it stems from the activation of simple associations between size and value, that either ''larger is better'' or that ''smaller is better.'' We suspect motivation is at play for at least two reasons. First, it is unclear why a pure association account would produce the observed findings of Experiment 2 where the physical presence of the object intensified the bias given that in both cases the relevant association is the same. Second, the fourth experiment found both that it was possible to reverse the effect and that the effect was mediated by subjective value. If powerlessness naturally triggered the cultural associations, it is unclear why the reversal would occur or why subjective value would mediate the effects. Nonetheless, future research should aim at further exploring the process or processes underlying the demonstrated effects.

Another direction for future research entails further investigating the link between the effects reported here and those found by Rucker and Galinsky (2008, 2009). In particular, one unanswered question is whether the powerless reprioritized their spending habits in Rucker and Galinsky solely because they were more motivated to do so or because they also fundamentally misrepresented the value of status objects. For example, their powerless participants not only might have desired status-related objects more but also might have represented the

objects as having higher monetary value (i.e., price tags). This increase in the perceived price tag of such objects might have contributed to participants increased willingness to pay for the objects, along with their desire for status-related objects.

In addition, given the reversal documented in our fourth experiment, which found a negative size-to-value relationship, future research might test the generalizability of our effects in different contexts. For example, in the classic research by Bruner and Goodman (1947), where actual states of deprivation led to perceiving money as larger, it might be possible that the relationship between socioeconomic status and size of monetary drawings would be reversed in cultures where there is a negative size-to-value relationship.

Last but not least, future research might examine everyday consequences of the accentuation bias. For instance, one might hypothesize that the accentuation bias by the powerless not only would affect their perception of money but also would extend to any object associated with value. For example, one might view one's ideal home as larger when powerless as opposed to powerful. Of course, this should be limited to objects associated with value; powerlessness should have little effect on people's perception of the desired length of their garden hose.

Conclusion

Journalist H. L. Mencken (1880–1956) stated once that ''the chief value of money lies in the fact that one lives in a world in which it is overestimated.'' The present research qualifies this quote by demonstrating that the powerless might do so to a much greater extent than the powerful. The current investigation also highlights how acquired and learned cultural norms play a crucial role in people's general overestimation of money and suggests that by changing the value norms, one might be able to fundamentally alter these misperceptions. The relationship between size and value dramatically affects how people perceive objects; for the powerless, valuable objects loom psychologically larger even when they sometimes appear smaller.

Declaration of Conflict of Interest

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

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Note

1. Across the experiments, values greater than 3 standard deviations (one in Experiment 1 and two in Experiment 2) were removed from the analyses. Inclusion of these data points does not alter the results.

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Bios

David Dubois is a Doctoral Candidate in Marketing at the Kellogg School of Management, Northwestern University. His research focuses on the effect of power on how people perceive, think, feel, and behave in consumer contexts, and the factors governing the success or failure of mass messages (e.g., advertisements).

Derek D. Rucker is Associate Professor of Marketing at the Kellogg School of Management, Northwestern University. His primary research focuses on attitudes, persuasion, and social cognition with an emphasis on how constructs such as confidence, power, and emotion affect these elements of human behavior.

Adam D. Galinsky is Kaplan Professor of Ethics and Decision in Management at the Kellogg School of Management, Northwestern University. He studies how hierarchy shapes thinking and behavior, which strategies are most effective in dealing with diversity, counterfactual thinking, and auction and negotiation behavior.