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Power and Reduced Temporal Discounting

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Abstract

Decision makers generally feel disconnected from their future selves, an experience that leads them to prefer smaller immediate gains to larger future gains. This pervasive tendency is known as temporal discounting, and researchers across disciplines are interested in understanding how to overcome it. Following recent advances in the power literature, we suggest that the experience of power enhances one's connection with the future self, which in turn results in reduced temporal discounting. In Study 1, we found that participants assigned to high-power roles were less likely than participants assigned to low-power roles to display temporal discounting. In Studies 2 and 3, priming power reduced temporal discounting in monetary and nonmonetary tasks, and, further, connection with the future self mediated the relation between power and reduced discounting. In Study 4, experiencing a general sense of power in the workplace predicted actual lifetime savings. These results have important implications for future research.

Keywords

power, temporal discounting, decision making, delay of gratification, self-control

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Would you rather receive $100 today or $125 a year from now? Although a 25% increase is an excellent 1-year return on investment, the average decision maker would choose the smaller immediate gain rather than the larger future gain. This tendency to discount the value of future gains is known as temporal discounting (Frederick, Loewenstein, & O'Donoghue, 2002; Kirby & Marakovic, 1995). People engage in temporal discounting because they feel less connected—and, therefore, less committed—to the self they will become in the future than the self they are presently (Bartels & Rips, 2010; Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, & Knutson, 2009; Hershfield, 2011). Consequently, temporal discounting is associated with a reduced willingness to delay gratification, including saving money for the future (Ersner-Hershfield et al., 2009), and is characterized by an across-the-board preference for short-term gains at the cost of larger long-term benefits (Hardisty & Weber, 2009; Keough, Zimbardo, & Boyd, 1999).

Given the negative long-term consequences of temporal discounting, decision-making researchers across disciplines have become interested in identifying factors that mitigate this tendency. One set of findings reveals that connecting people to their future selves by showing them computer-generated pictures of what they will look like in the future increases their willingness to delay instant consumption and save money for the future (Hershfield et al., 2011). In the present research, we posited that the experience of power may also play a key role in both connecting individuals to their future selves and reducing temporal discounting.

Although many researchers assume that power makes people less, rather than more, willing to wait for larger future gains, we predicted the opposite. In particular, we hypothesized that power reduces the tendency to engage in temporal discounting because it fosters a stronger connection with the future self. By positing and testing a clear process by which individuals can be enticed to feel connected to their future self as well as wait for future gains, we contribute to three rapidly growing areas of research: the psychology of power, connection with the future self, and temporal discounting.

Power and Connection to the Future Self

On the surface, it might appear that power—defined as asymmetric control over valued outcomes and resources—is associated with reduced ability to delay gratification. Indeed, power leads to greater risk taking (Anderson & Galinsky, 2006), action orientation (Galinsky, Gruenfeld, & Magee, 2003), illusory control (Fast, Gruenfeld, Sivanathan, & Galinsky, 2009), and heightened reward sensitivity (Anderson & Berdahl, 2002), all tendencies that are often associated with disinhibition and poor decision making. Yet it is also true that power holders often make economically successful decisions. Moreover,

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power is associated with enhanced executive functioning (Smith, Jostmann, Galinsky, & van Dijk, 2008), increased abstract processing (Smith & Trope, 2006), and a heightened ability to focus on and pursue goals (Guinote, 2007; Overbeck & Park, 2001, 2006). A key question that emerges from these seemingly paradoxical findings is whether power increases one's tendency to sacrifice present rewards in order to gain even larger future rewards.

We reconcile these seemingly contradictory observations by theorizing that power may lead to a greater perceived connection with the future self. Two sets of findings in the power literature support this idea. First, recent research indicates that power activates a high-level construal orientation (Magee, Milliken, & Lurie, 2010; Smith, Dijksterhuis, & Wigboldus, 2008; Smith & Trope, 2006). High-level construal expands temporal horizons (Trope & Liberman, 2010), which results in the perception of the distant future as being closer and imminent (Kanten, 2011; Experiment 4) and induces a sense of connection with the future self. Second, power engenders a sense of control and optimism, and this reduces the subjective uncertainty and hypotheticality associated with the future (Anderson & Galinsky, 2006; Fast et al., 2009). Uncertainty about the future is one of the causes of temporal discounting (Frederick et al., 2002). To the extent that power holders experience greater control and less uncertainty over their futures, they are more likely to feel connected to their future selves. Events marked by certainty are represented as temporally closer than events marked by uncertainty (Bar-Anan, Liberman, Trope, & Algom, 2007; Wakslak, 2012), a finding that provides support for the idea that power may increase one's tendency to feel strongly connected to the future self.

Building on these ideas, we suggest that power leads people who have it to delay instant gratification and wait for larger future rewards, an effect that is mediated by connection with one's future self. It is to the latter idea that we now turn.

Connection to the Future Self and Reduced Temporal Discounting

To the degree that power increases connection with the future self, we propose that it reduces temporal discounting. A growing body of research indicates that a lack of connection with the future self is a key reason that people prefer smaller immediate gains to larger future gains (e.g., Bartels & Rips, 2010; Ersner-Hershfield et al., 2009; Parfit, 1984; Pronin, Olivola, & Kennedy, 2008). For example, Pronin et al. (2008) demonstrated that decisions made on behalf of the future self often resemble decisions made for other individuals more than decisions made for the present self. In particular, participants were more likely to select smaller, but immediate, rewards when making decisions for their present self than when making decisions for another person or for their future self.

Additional research has demonstrated that manipulating connection with the future self influences temporal discounting. For instance, priming participants to feel disconnected from their future self by reading about characters that underwent life-changing episodes resulted in a greater preference for smaller present gains than for larger future gains (Bartels & Rips, 2010). Similarly, inducing connection with the future self by asking participants to generate reasons why their identity would remain stable over time resulted in reduced temporal discounting (Bartels & Urminsky, 2011). Finally, Ersner-Hershfield et al. (2009) found that participants who feel closely connected to their future selves are more likely to delay immediate consumption and save money for the future. Building on these findings, we sought to advance the power and discounting literatures by examining whether power reduces temporal discounting and, if it does, whether this occurs because it fosters connection with the future self.

Overview of the Present Research

We conducted four studies to test our hypotheses that (a) experiencing power is associated with reduced temporal discounting and (b) connection with the future self mediates this tendency for power to reduce temporal discounting. In Study 1, we used role manipulations to assess whether individuals with power are less likely to discount their future selves than less powerful individuals are. In Studies 2 and 3, we examined whether the relation between power and future discounting is mediated by connection with the future self. In Study 4, we assessed the relation between power and lifetime savings.

Study 1

In Study 1, we manipulated power using a role manipulation; participants in the high-power condition were assigned the role of team manager, whereas participants in the low-power condition were assigned the role of team worker. Following the power manipulation, participants completed a measure of temporal discounting.

Method

Participants. Participants were 73 individuals (43 women, 30 men) recruited via Amazon's Mechanical Turk. Participants ranged in age from 18 to 63 years (M = 33.11, SD = 11.00)[1] and participated in exchange for $1.

Materials and procedure. To conduct the power manipulation, we randomly assigned participants to either the role of a team manager (high-power condition) or a team worker (low-power condition) in what they believed was a four-person virtual team. It was specified that the team manager would have the power to assign tasks to the team workers from a list that included an arithmetic task, a word jumble, and a general knowledge task. In contrast, the team workers were informed that they would "not have a say in the choice of tasks and will be required to perform the task selected by the team manager."

Before beginning the group tasks, participants were requested to complete some questionnaires, which included the temporal-discounting task.

For the temporal-discounting task, participants gave preferences related to winning a lottery. They completed a series of nine binary choices, choosing between receiving $120 immediately or varying amounts of money ($113, $120, $137, $154, $171, $189, $206, $223, and $240) in 1 year (Hardisty & Weber, 2009).

We used the titration procedure to obtain the point at which participants equally valued present and future gains. This indifference point was then used to calculate a discounting rate for each participant using the hyperbolic-discounting formula. For each participant, the discount factor k was computed as follows: $k = (A/V - 1)$/time in years, where A (future amount) is the value needed in the future to discount V (current amount) immediately. Larger values of k imply greater temporal discounting. Values of k equal to or less than 0 are considered invalid because they are not indicative of greater patience (for details, see Hardisty & Weber, 2009).

Participants also completed a manipulation check measuring perceived power over team members on a 7-point scale. Data of 6 participants who did not show any temporal discounting on the binary choice task or showed inconsistent responding were excluded from analysis.

Results and discussion

The power manipulation was effective; participants in the high-power condition reported greater power than did participants in the low-power condition, $t(65) = 5.60$, $p < .001$, $\eta_p^2 = .38$. Furthermore, as hypothesized, participants in the high-power condition engaged in lower temporal discounting ($M = 0.43$, $SD = 0.30$) than did participants in the low-power condition ($M = 0.73$, $SD = 0.42$), $t(65) = 2.32$, $p = .02$, $\eta_p^2 = .07$. This study showed that assigning participants to a high-power manipulation led to lower temporal discounting than did assigning participants to a low-power manipulation. In other words, high-power individuals were more willing than their counterparts to wait for larger future gains.

Study 2

In Study 2, we examined whether connection with the future self mediates the relationship between power and reduced temporal discounting.

Method

Participants. Participants were 59 undergraduates (32 women, 27 men) ranging in age from 18 to 24 years ($M = 19.95$, $SD = 1.64$). All were from a West Coast university and participated in a Web-based study in exchange for course credit.

Materials and procedure. Power was manipulated with a recall paradigm (Galinsky et al., 2003). Participants in the high-power condition recalled and wrote about a situation in which they had power over other people. Participants in the baseline condition wrote about their last visit to the grocery store (e.g., Gruenfeld, Inesi, Magee, & Galinsky, 2008). Following the power manipulation, participants completed a measure of connection with their future self and a temporal-discounting task (counterbalanced order).

To measure participants' connection with their future self, we used a variation of the Inclusion of Other in the Self scale (Aron, Aron, & Smollan, 1992): Participants selected from seven sets of increasingly overlapping circles to indicate both how "connected" and how "similar" they felt to their selves in 10 years (see Ersner-Hershfield et al., 2009).

To ensure that participants were motivated for the temporal-discounting task, we informed them that 1 of the participants would receive a free gift certificate to a major online retailer. They went on to read that, "If your survey is chosen, you will receive the gift certificate either this evening, when the drawing will occur, or in one year. What you would receive is determined by selecting at random one of the nine choices you make below. Since you may actually receive the option you choose, please make each of the following choices carefully." Participants then completed a series of nine binary choices, choosing between $120 immediately and varying amounts of money (the same as in Study 1) in a year. Data from 5 participants who reported a preference for smaller or equal amounts of money in the future than in the present were excluded (Hardisty & Weber, 2009). An estimate of discount factor was computed for each participant.

Results and discussion

Consistent with Study 1, results showed that high-power participants ($M = 0.40$, $SD = 0.25$) showed lower temporal discounting than did participants in the baseline condition ($M = 0.55$, $SD = 0.25$), $t(1, 53) = 2.12$, $p = .04$, $\eta_p^2 = .08$. Additionally, as predicted, high-power participants felt more connected with their future selves ($M = 4.04$, $SD = 1.12$) than did participants in the baseline condition ($M = 3.24$, $SD = 1.36$), $t(1, 53) = 2.91$, $p = .02$, $\eta_p^2 = .09$. Further, connection with the future self mediated the relation between power and temporal discounting (see Fig. 1).

These findings demonstrate that power increases feelings of connection with the future self and that this connection mediates power's tendency to reduce temporal discounting. A limitation of this study is that participants in the high-power condition, by recalling a situation in which they had power over other people, may have been primed to make decisions on behalf of others, which in turn resulted in decreased temporal discounting. We overcame this potential flaw by including a low-power condition in Study 3.

Study 3

In Study 3, we examined whether the effects of power on temporal discounting would extend to nonmonetary scenarios by

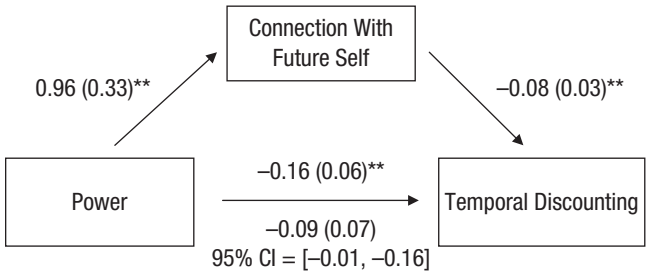

Fig. 1. Results from Study 2: the influence of power on temporal discounting, as mediated by connection with the future self. Regression coefficients are unstandardized, and standard errors are given in parentheses. Asterisks indicate significant path coefficients (**$p < .01$). On the path from power to temporal discounting, the values above the arrow are from the model without the mediator, and the values below the arrow are from the model that included the mediator (also shown is the bootstrapped 95% confidence interval, or CI; Preacher & Hayes, 2004).

assessing preferences for gains in air quality (Hardisty & Weber, 2009).

Method

Participants. Participants were 85 students (31 women, 52 men, 2 undisclosed) ranging in age from 18 to 32 years (M = 22.61, SD = 2.61). All were from a West Coast university and participated in a Web-based study in exchange for course credit.

Materials and procedure. To conduct our power manipulation, we randomly assigned each participant to a high-power, low-power, or baseline condition. As in Study 2, participants in the high-power condition recalled and wrote about a situation when they had power. Participants in the low-power condition wrote about a situation when they lacked power. Those in the baseline condition wrote about their last trip to the grocery store.

Following the power manipulation, participants completed a measure of connection with the future self (same as Study 2) and a temporal-discounting task. The two were presented in a counterbalanced order. Following Hardisty and Weber (2009), we administered the temporal-discounting task by asking participants to read the following: "The County Department is considering a temporary change in its emission policy to study the effects of air quality on human health and local wildlife. In order to study the effects of air quality, the particulate output of nearby factories and power plants would be immediately *reduced* for a period of three weeks, after which time the air quality would return to its former level, but the government is also considering making the change 1 year in the future, for a different length of time." Participants were then provided with eight binary choices, in which they selected between "improved air quality immediately for 21 days" and "improved air quality one year from now for same or more days." The number of days in the future was 21, 23, 25, 27, 29, 31, 33, or 35. An indifference point was estimated based on participants' pattern of choices and a discount factor (k = indifference value/21 − 1) was computed for each participant. Data from 7 participants who showed inconsistent patterns of responding or yielded a discount factor equal to or less than 0 were excluded.

Results and discussion

Contrast effects comparing participants in the high-power condition with those in the low-power and baseline conditions indicated that high-power participants showed lower temporal discounting than did participants in the other two conditions, $t(1, 76) = 2.32$, $p = .02$, $\eta_p^2 = .06$. Additionally, high-power participants scored higher on the measure of connection with the future self than did participants in the other two conditions, $t(1, 76) = 2.24$, $p = .03$, $\eta_p^2 = .06$ (see Table 1).

As hypothesized, power was inversely related to temporal discounting, $b = -0.15$, $SE = 0.06$, $t(76) = -2.54$, $p = .01$. Connection with the future self also predicted temporal-discounting scores, $b = -0.06$, $SE = 0.02$, $t(76) = -3.06$, $p = .003$. Power did not significantly predict temporal discounting when connection with the future self was included in the model to test for mediation, $b = -0.04$, $SE = 0.02$, $t(76) = -1.74$, $p = .08$ (95% bootstrapped confidence intervals of indirect effects = [−0.005, −0.06]). Participants primed with power experienced greater connection with the future self than participants not primed with power, which in turn mediated the former group's lower temporal-discounting rates. This result bolsters the findings from Studies 1 and 2, and it also extends them beyond a monetary paradigm.

Study 4

In our final study, we examined the potential long-term impact of power on saving behavior. Ersner-Hershfield et al. (2009) found that connection with one's future self predicts lifetime

Table 1. Results From Study 3: Mean Scores for Connection With the Future Self and Temporal-Discounting Factors

Measure	High-power condition	Low-power condition	Baseline condition
Connection with the future self	4.70_a (1.53)	3.85_b (1.43)	3.98_b (1.44)
Temporal discounting	0.40_a (.27)	0.57_b (.27)	0.52_b (.24)

Note: Standard deviations are given in parentheses. Within a row, values with different subscripts are significantly different ($p < .05$), as determined by an independent-samples t test.

Table 2. Regression Results from Study 4: Effects of Perceptions of Power in the Workplace on Lifetime Savings

Variable	Model 1	Model 2	Model 3	Model 4
Power in the workplace	1.36** (0.52)	1.07* (0.53)	1.02** (0.42)	0.78 (0.42)
Connection with future self	—	1.46* (0.62)	—	1.34** (0.51)
Annual income	—	—	0.79*** (0.19)	0.83*** (0.19)
Subjective socioeconomic status	—	—	1.00 (0.60)	1.03** (0.53)
Age	—	—	0.09* (0.05)	0.05 (0.05)
Sex	—	—	−1.79 (0.91)	−1.53 (0.88)

Note: Model 1 included power in the workplace as the only predictor. Connection with the future self was added in Model 2. Models 3 and 4 corresponded to Models 1 and 2, respectively, but they controlled for annual income, socioeconomic status, age, and sex. Regression coefficients are unstandardized, and standard errors are given in parentheses.
*$p < .05$. **$p < .01$. ***$p < .001$.

savings. We hypothesized that individuals who routinely experience power in their workplace will be more likely to delay immediate consumption and accumulate wealth for their future than individuals who do not experience power in their workplace.

Method

Participants. Participants were 96 employed individuals (46 women, 50 men) recruited from Amazon's Mechanical Turk. Their ages ranged from 18 to 63 years (M = 33.66, SD = 10.03), and they participated in a Web-based study in exchange for $1. Participants were employed in a broad array of jobs, with incomes ranging from $0 to $180,000 per year ($Mdn$ = $43,500 per year).

Materials and procedure. Participants completed measures of workplace power, connection with their future self (Husman & Shell, 2008), and total lifetime savings (Ersner-Hershfield et al., 2009). To assess workplace power, we adapted the Sense of Power scale (Anderson, John, & Keltner, 2012): Participants rated the extent to which they had a high sense of power in the workplace using eight items (e.g., "I have a great deal of power at my place of work"); ratings were made on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*; α = .90).

To assess stable interindividual differences in connection with the future self, we used the previously validated Future Extension subscale from the Future Connection scale (Husman & Shell, 2008). Participants rated the extent to which they felt that their future was temporally close to the present (e.g., "In general, six months seems like a very short period of time") using a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*; α = .90).

As in the study of Ersner-Hershfield et al. (2009), participants indicated their total lifetime savings using 16 categories ($0–$500, $15,000–$20,000 . . . more than $250,000). Participants also reported the number of income-earning members in their household, number of individuals in their household, current household income, and total debt.

Results and discussion

Participants' perceptions of their power in the workplace predicted the extent to which they felt connected to their future selves, β = 0.22, $t(91) = 2.22$, $p = .02$. As expected, sense of power at work also predicted total savings, β = 0.20, $t(91) = 2.41$, $p = .01$, even after controlling for annual income, socioeconomic status, age, and sex (see Table 2). As Figure 2 shows, connection to the future self mediated the relationship between workplace power and total savings. Even though the study had limitations, including reliance on self-report measures and the use of a widely diverse sample, the findings provide initial evidence that the experience of power has real and important consequences for an individual's ongoing willingness to delay gratification and accumulate assets for the benefit of the future self.

General Discussion

Across four studies, we found that power is associated with reduced temporal discounting and that this willingness to

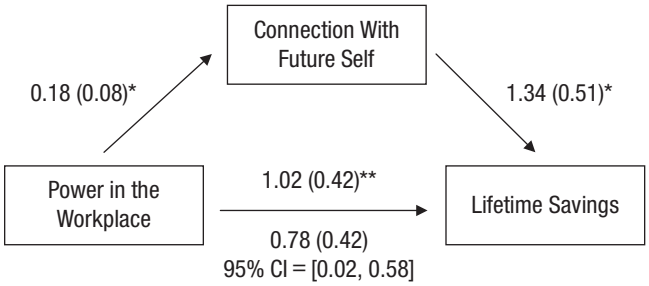

Fig. 2. Results from Study 4: the influence of power in the workplace on lifetime savings, as mediated by connection with the future self. Regression coefficients are unstandardized, and standard errors are given in parentheses. Asterisks indicate significant path coefficients (*$p < .05$; **$p < .01$). On the path from power in the workplace to lifetime savings, the values above the arrow are from the model without the mediator, and the values below the arrow are from the model that included the mediator (also shown is the bootstrapped 95% confidence interval, or CI; Preacher & Hayes, 2004). Annual income, subjective socioeconomic status, age, and sex were included as covariates in these two models.

delay immediate gratification is mediated by an increased connection with one's future self. In Study 1, priming participants with a high-power role resulted in reduced temporal discounting of monetary gains. In Studies 2 and 3, compared with participants who had less power, high-power participants reported feeling more connected with their future selves and were, as a result, more willing to wait for future gains. Finally, Study 4 demonstrated that greater power in the workplace is associated with greater total lifetime savings, even after accounting for annual income, socioeconomic status, age, and sex. Overall, these findings indicate that power holders are more likely than people with less power to make decisions that benefit their future selves.

These findings offer a number of contributions to research on power and temporal discounting. They are the first, to our knowledge, to demonstrate that power reduces temporal discounting and, in so doing, can actually increase the tendency to delay gratification. When induced to feel more powerful, individuals showed greater willingness to wait for larger future rewards, which suggests that power holders may be more prone to make decisions that account for the needs and desires of their future selves. Not only does this finding contribute to the power literature, but it also demonstrates a previously uncovered determinant of reduced temporal discounting. Although much research effort has been expended on the causes and consequences of temporal discounting, relatively little has focused on ways to reduce temporal discounting. By showing that power reduces temporal discounting, we contribute to an emerging literature on the psychological factors that influence discounting and saving tendencies (Bartels & Urminsky, 2011; Ersner-Hershfield et al., 2009; Hershfield et al., 2011).

The present findings also suggest that power appears to focus people's goals on a broader notion of self. In other words, high-power individuals appear to view their future and present selves as having overlap, and they extend the conception of their present self to include the future self. Thus, they are willing to take future consequences into account when making current decisions. The present findings also extend previous work showing that power leads to higher-level construal (Smith & Trope, 2006), which suggests that more power may in fact lead to greater temporal distance and a broader sense of self, as exhibited by an enhanced connection with the future self.

Previous research has found that, consistent with the stereotype of the high-power Wall Street banker who takes on too much risk, power holders often make risky and loss-producing decisions (e.g., Anderson & Galinsky, 2006; Fast, Sivanathan, Mayer, & Galinsky, 2012). At first glance, these findings seem to be at odds with our present results. However, our findings clarify the relationship between power and decision making by revealing that power holders have a broader sense of self than do people with less power. In the present studies, this connection with the future self translated into a greater willingness to delay gratification in order to obtain greater personal reward. However, it is worth noting that our studies did not introduce any element of risk; thus, our findings cannot be taken to imply that power holders will always make the best or the safest decisions. Rather, they indicate that power leads people to make choices they believe will bring the greatest net benefit to them, be it to their present self or their future self. Given the enhanced connection with the future self, paired with optimism and overconfidence about the future, power holders may in fact be very willing to take risks in the present if they think that doing so will maximize gains for their future self.

Limitations and future directions

Our research has limitations, but it poses some interesting directions for future research. For example, although we found that power reduces temporal discounting by enhancing connection with the future self, we did not empirically examine potential mechanisms for the latter mediating effect. We suggest that two distinct mechanisms—enhanced abstract processing and reduced uncertainty experienced by power holders—account for the relation between power and connection to the future self. Future researchers could examine the role of each of these processes to explain the relation between power and connection with the future self. Similarly, it is possible that abstract processing may explain power holders' connection with the future self as well as their enhanced patience, particularly because inducing abstract processing has been associated with time perception (Kanten, 2011) and reduced temporal discounting (Fujita, Trope, Liberman, & Levin-Sagi, 2006).

Future research could also shed greater light on when the effects observed in the present research are most likely to occur. Factors such as the beneficiary of the decision being made (i.e., self versus other) may influence power holders' willingness to wait for larger future gains. Individual traits, such as narcissism, may also moderate the strength of the present effects. Additionally, role expectations associated with one's power, such as the need to accrue short-term gains, may also moderate the relation between power and temporal discounting.

Conclusion

The present findings reveal that the experience of power enhances connection with the future self, which results in an increased ability to transcend the present self when making decisions. This research offers a road map for improving certain decisions about the future, such as the choice between spending money in the moment versus saving it for later. Increasing people's sense of power, for example, may make them more inclined to save money. Of course, feeling powerful also introduces potential pitfalls, such as overconfidence (Fast et al., 2012), so it is important to foster awareness of all of power's effects. Otherwise, the power holder may make overly risky—albeit well intentioned—decisions on behalf of the future self.

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.

Note

1. Neither age nor sex was associated with temporal discounting in any of our experimental studies.

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