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. Drawing from recent advances in the power literature, we suggest that the experience of power enhances one’s connection with the future self, resulting in reduced temporal discounting. In Study 1, we show that participants assigned to high-power roles are less likely than others to display temporal discounting. In Studies 2 and 3, we find that priming power reduces temporal discounting in monetary and non-monetary tasks and, further, that connection with the future self mediates the relationship between power and reduced discounting. In Study 4, we show that experiencing a general sense of power in the workplace predicts actual lifetime savings. Implications and future research directions are discussed.

Keywords: Power, temporal discounting, decision making, delay of gratification, self control
Would you rather receive $100 today or $125 a year from now? Although a 25% increase is an excellent one-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, Lowenstein, & 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 (Herschfield et al., 2011). In the present paper, we posit 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 assume that power makes people less, rather than more, willing to wait for larger future gains, we predict the opposite. In particular, we hypothesize that power reduces the tendency to engage in temporal discounting by fostering 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, power is associated with enhanced executive functioning (Smith, Jostmann, Galinsky, & van Dijk, 2008), increased abstract processing (Smith & Trope, 2006) and a greater 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 or not 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 support this idea. Firstly, recent research indicates that power activates a high-level construal orientation (Magee, Milliken, & Lurie, 2010; Smith & Trope, 2006; Smith, Dijksterhuis, & Wigboldus, 2008). High-level construal expands temporal horizons (Trope & Liberman, 2010), resulting in the perception of the distant future as being closer and imminent (Kanten, 2011; experiment 4), inducing a sense of connection with the future self. Secondly, power engenders a sense of control and
optimism, reducing 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, Loewenstein, & O’Donoghue, 2002). To the extent that power holders experience greater control and reduced uncertainty over their futures, they are likely to feel connected to their future selves. Finally, events marked by certainty are represented as temporally closer (Bar-Anan, Liberman, Trope, & Algom, 2007; Wakslak, 2012), providing additional 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 those 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.

**Future Connection 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 small 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, but differ from the 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 demonstrates 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 present gains as compared to 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 seek to advance the power and discounting literatures by predicting that power reduces temporal discounting, and that it does so by fostering connection with the future self.

**Overview of the present research**

We conducted four studies to test our hypotheses that (1) experiencing power is associated with reduced temporal discounting, and (2) 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 the future relative to less-powerful others. 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 the measure of temporal discounting.
Method

Participants

Participants were 73 Amazon Mechanical Turk (MTurk) workers (43 women, 30 men), ranging in age from 18-63 years ($M=33.11$, $SD=11.00$) who participated in exchange for $1.

Materials and Procedure

Power manipulation. Participants were randomly assigned to either the role of a Team Manager (high-power condition) or 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 of tasks which 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.

Temporal discounting task. Participants gave preferences related to winning a lottery. They considered the option of receiving either $120 immediately with a different amount one year later. Participants then completed a series of 9 binary choices, choosing between $120 today and varying amounts of money ($113, $120, $137, $154, $171, $189, $206, $223, and $240) in a 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 where $k=(A/V-1)/\text{time in years}$, where $A$ (future amount) is the value needed in the future to discount $V$ (current amount) immediately. Large values of $k$ imply greater
temporal discounting. Values of \( k \) equal or less than 0 are considered invalid as 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 was excluded from analysis.

**Results and Discussion**

Neither age nor sex was associated with temporal discounting in any of our experimental studies and is not discussed further. The power manipulation was effective; participants in the high-power condition reported greater power than participants in the low-power condition, \( t(65)=5.60, p<.001, \eta^2_p=.38 \). Importantly, as hypothesized, high-power participants engaged in lower temporal discounting (\( M=.43, SD=.30 \)) than participants in the low-power condition (\( M=.73, SD=.42 \)), \( t(65)=2.32, p=.02, \eta^2_p=.07 \). This study showed that assigning participants to a high-power manipulation led to lower temporal discounting. 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 18-24 years (\( M=19.95, SD=1.64 \)) from a West Coast university who participated in a web-based study in exchange for course credit.

**Materials and Procedure**
Power manipulation. 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 others. Participants in the baseline condition wrote about their last visit to the grocery store (e.g., Gruenfeld et al., 2008). Following the power manipulation, participants completed measures of connection with future self and temporal discounting task (counterbalanced order).

Connection with the future self. Using a variation of the Inclusion of Others in Self (IOS) 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 future selves (i.e., self in ten years; see Ersner-Hershfield et al., 2009).

Temporal discounting task. To ensure that participants were motivated for the discounting task, they were informed that one 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 9 binary choices, choosing between $120 today and varying amounts of money (same as Study 1) in a year. Data from five participants who reported a preference for smaller or equal amounts of money in the future as compared to amounts 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, high-power participants ($M=.40, SD=.25$) showed lower temporal discounting than participants in the baseline condition ($M=.55, SD=.25$), $t(1, 53)=2.12, p=.04, \eta^2_p=.08$. Additionally, as predicted, high-power participants felt more connected with their future selves ($M=4.04, SD=1.12$) than those in the baseline condition ($M=3.24, SD=1.36$), $t(1, 53)=2.91, p=.02, \eta^2_p=.09$. Further, connection with the future self mediated the relation between power and temporal discounting (see Figure 1).

These findings demonstrate that power leads to a greater connection with the future self and that this connection mediates power’s tendency to reduce temporal discounting. A limitation is that participants in the high-power condition, by recalling a situation in which they had power over others, may have been primed to make decisions on behalf of others, resulting in lower temporal discounting. We overcome 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 non-monetary scenarios as well, 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 18-32 years ($M=22.61, SD=2.61$) from a West Coast university who participated in a web-based study in exchange for course credit.

**Materials and Procedure**
**Power manipulation.** Participants were randomly assigned 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.

**Connection with future self.** Following the power manipulation, participants completed measures of connection with the future self (same as Study 2) and temporal discounting. The two were presented in a counterbalanced order.

**Temporal discounting task.** Consistent with Hardisty and Weber (2009), participants 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 8 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 (21, 23, 25, 27, 29, 31, 33, 35) days.” An indifference point was estimated based on participants pattern of choices and a discount factor ($k=\text{Indifference value}/21-1$) was computer for each participant. Data from 7 participants who showed inconsistent pattern of responding or yielded a discount factor equal or less than 0 were excluded.

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

As hypothesized, power was inversely related to temporal discounting, $B=-.15, SE=.06, t=-2.54, p=.01$. Connection with the future self also predicted scores on temporal discounting, $B=-.06, SE=.02, t=-3.06, p=.003$. Power did not significantly predict temporal discounting when connection with the future self was included in the model to test for mediation, $B=-.04, SE=.02, t=-1.74, p=.08$ (95% bootstrapping confidence intervals of indirect effects, $LL=-.005, UL=-.06$).

Participants primed with power experienced greater connection with the future self, which, in turn, mediated their lower temporal discounting rates. This bolsters the findings from Studies 1 and 2, 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 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.

**Participants**

Participants were 96 employed MTurk workers (46 women, 50 men), ranging in age from 18-63 years ($M=33.66, SD=10.03$) who participated in a web-based study in exchange for $1.
Participants were employed in a broad array of jobs with incomes ranging from $0-180,000 (Median=43,500).

Materials and Procedure

Participants completed measures of workplace power, future connection (Husman & Shell, 2008), and total lifetime savings (Ersner-Hershfield et al., 2009).

Workplace power. Using an adaptation of the general sense of power measure (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”) using a 7-point scale (1=strongly disagree, 7=strongly agree; α=.90).

Future connection. To assess stable inter-individual 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).

Lifetime savings. As in Ersner-Hershfield et al. (2009), participants indicated their total assets, using 16 categories (e.g., 0-$500, $15,000-$20,000… More than $250,000). Participants also reported the number of earning members in the household, number of individuals in the household, current household income, as well as total debt.

Results and Discussion

Participants’ perceptions of power in the workplace predicted the extent to which they felt connected to their future selves, $B=0.22$, $t=2.22$, $p=.02$. As expected, sense of power at work also predicted total savings, $B=.20$, $t=2.41$, $p=.01$, even after controlling for annual income, socio-economic status, age, and sex (see Table 2). As shown in Figure 2, connection to the future
mediated the relationship between work power and total savings. Even though the study has limitations including reliance on self report measures and the use of a widely diverse sample, the findings provide initial evidence indicating 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 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, 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 power in the workplace is associated with greater total savings, even after accounting for annual income, socio-economic status, age, and sex. Overall, these findings indicate that power holders are more likely than others 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 powerful, individuals show greater willingness to wait for larger future rewards, suggesting that power holders may be more prone to make decisions that account for 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 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 the future self and present self as having overlap and 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), suggesting that 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.

Interestingly, 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 others. In the present studies, this connection with the future self translated into an increased 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 for their present self or the 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 as well as poses some interesting directions for future research. For example, although we found that power reduces 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 research 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. Situational 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, such as need to accrue short-term gains, associated with one’s power 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, resulting in a greater ability to transcend the present self when making decisions. This research offers a roadmap 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.
References


Table 1. Effects of power on connection with the future self and temporal discounting (Study 3)

<table>
<thead>
<tr>
<th>Connection with the future self</th>
<th>M (SD)</th>
<th>M (SD)</th>
<th>M (SD)</th>
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<td>High-power</td>
<td>4.70a</td>
<td>3.85b</td>
<td>3.98b</td>
</tr>
<tr>
<td>Low-power</td>
<td>3.85b</td>
<td>1.43</td>
<td>1.44</td>
</tr>
<tr>
<td>Baseline condition</td>
<td>3.98b</td>
<td>1.44</td>
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Note: Means with different subscripts differ at the .05 level as determined by an independent-samples t-test.

Table 2. Effects of perceptions of work power on lifetime savings (Study 4)

<table>
<thead>
<tr>
<th>Variable</th>
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<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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<td>1.07*</td>
<td>1.02**</td>
<td>.78</td>
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<td></td>
<td>(.52)</td>
<td>(.53)</td>
<td>(.42)</td>
<td>(.42)</td>
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<tr>
<td>Future connection</td>
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<tr>
<td></td>
<td>(.62)</td>
<td>(.51)</td>
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<tr>
<td>Annual income</td>
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<td>.83***</td>
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<tr>
<td></td>
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<td>(.19)</td>
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<tr>
<td>Subjective socio-economic status</td>
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*p < .05, **p < .01, ***p < .001
Figure 1. Connection with the future self mediates the relation between power and temporal discounting (Study 2)

Values are unstandardized regression coefficients (values in parentheses are standard errors). Bootstrapping confidence intervals (Preacher and Hayes, 2004) are also reported.

Figure 2. Future connection mediates the relation between power in the workplace and lifetime savings (Study 4)

Values are unstandardized regression coefficients (values in parentheses are standard errors). Annual income, subjective socio-economic status, age, and sex are included as covariates in all analyses.