American Psychological Association

Journal of Personality and Social Psychology:
Attitudes and Social Cognition

© 2019 American Psychological Association
0022-3514/19/$12.00

2019, Vol. 117, No. 4, 741–757
http://dx.doi.org/10.1037/pspa0000159

Securing the Future: Threat to Self-Image Spurs Financial Saving Intentions

Yael Steinhart
Tel-Aviv University

Yuwei Jiang
Hong Kong Polytechnic University

This research examines when and why a threat to self-image influences saving intentions. Data from a set of seven studies, comprising a large-scale survey and 6 experiments, show that when individuals experience a self-image threat, they generate negative expectations about their future. Consequently, these individuals show a greater propensity to save money compared with nonthreatened individuals. We demonstrate that this effect diverges from the effects of environmental threats (e.g., resource scarcity) on saving, and find that it is more likely to occur among individuals with strong rather than weak beliefs in the instrumentality of money. Finally, we observe that the relationship between self-image threat and saving intentions is attenuated under the following conditions: (a) when individuals are induced to adopt positive future expectations; (b) when individuals perceive themselves as having abundant social connections, a perception that buffers their anxiety about the future; or (c) when individuals' attention is directed, through self-affirmation, to important aspects of their lives that are irrelevant to the threat.

Keywords: self-image threat, financial decision making, self-affirmation, money instrumentality, social connections

Supplemental materials: http://dx.doi.org/10.1037/pspa0000159.supp

In recent years, individuals have been saving less and spending more. In the United States, for example, as of January 2018, the average annual rate of personal savings (i.e., the ratio of personal income saved to personal net disposable income in the fiscal year) was 3.2%, which is low compared with 8.26%, the average annual percentage of personal savings for the 1959–2018 period (United States Bureau of Economic Analysis, 2018). A similar downward trend has been observed in other countries (including Germany, Spain, and Australia) and is expected to continue in the future (Barghini & Pasquali, 2015). Given that personal savings have important implications for the growth of the economy as a whole and for individuals' psychological health, these figures indicate that individuals' well-being might be at risk. A deeper understanding of the factors that drive individuals' saving intentions is thus warranted.

Over the years, researchers have proposed several perspectives on the factors that might influence individuals' saving intentions. One such perspective, adopted mainly by the economics literature, suggests that the primary factors driving individuals' saving decisions derive from the economic environment (e.g., Cheng, 1953; Juster & Wachtel, 1972; Lakonishok & Maberly, 1990; Ritter, 1988; Starr-McCluer, 2002), such as scarcity of economic resources (Griskevicius et al., 2013; Shah, Mullainathan, & Shafir, 2012). According to another perspective, established in the psychology literature, individuals' saving decisions are influenced by various psychological factors that are independent of the economic environment (e.g., Bryan & Hershfield, 2012; Cai, Yang, Wyer, & Xu, 2017; Canova, Rattazzi, & Webley, 2005; Kornadt, Voss, & Rothermund, 2015). In the current paper, we examine the impact of one classic psychological factor, namely, threat to self-image (e.g., Fein & Spencer, 1997; Spencer, Zanna, & Fong, 2005), on saving intentions. Specifically, we show that, in the presence of a threat to their self-image—that is, to their favorable perceptions of themselves—individuals express enhanced intentions to save for the future. We systematically investigate the reasons for and consequences of this phenomenon, theorizing that it occurs because self-image-threatened individuals tend to generalize the negative implications of their diminished self-perceptions to other aspects of their lives (Kernis, Brockner, & Frankel, 1989). This means that these individuals not only perceive their current state negatively but also develop negative expectations about the future: For example, they may anticipate catastrophes in multiple aspects of their lives. As savings can be considered a means of securing one's future (Modigliani, 1986; Zhang, 2009; Zhang & Baumeister,

This article was published Online First April 8, 2019.

Yael Steinhart, Coller School of Management, Tel-Aviv University; Yuwei Jiang, Department of Management and Marketing, Faculty of Business, Hong Kong Polytechnic University.

This research was supported by the research grants from the Jeremy Coller Foundation (Grant 0612015542) and the Henry Crown Institute of Business Research to Yael Steinhart, and the financial support from the Hong Kong Research Grants Council (Grant PolyU 155046/17B) and from the Asian Center for Branding and Marketing to Yuwei Jiang.

Both authors contributed equally to the research contained in this paper.

Correspondence concerning this article should be addressed to Yael Steinhart, Coller School of Management, Tel-Aviv University, Ramat Aviv 6997801, Israel. E-mail: ysteinhart@tauex.tau.ac.il

2006), self-image-threatened individuals may be more willing to save money compared with nonthreatened individuals.

We further seek to identify conditions in which a relationship between a threat to self-image and saving intentions is likely to be observed. First, in line with our proposition that negative expectations about the future drive the intention to save money among self-image-threatened individuals, we examine the effect of adopting different expectations about the future and show that positive expectations about the future indeed reduces the difference in saving intentions between self-image-threatened individuals and nonthreatened individuals. Second, we predict that the appeal of monetary saving in the current case is bounded by the extent to which individuals believe that money is instrumental (e.g., Duclos, Wan, & Jiang, 2013; Lea & Webley, 2006; Tang, 1995). That is, individuals who expect money to be useful in later stages of life should be more likely to increase saving when experiencing a self-image threat compared with individuals who question the instrumentality of money. Third, we anticipate that shifting one's attention to domains of self-integrity unrelated to the self-image threat by affirming one's core values (e.g., Sherman & Cohen, 2006) may attenuate the effect of the threat on one's inclination to save. In other words, we propose that individuals who realize that their self-worth does not hinge on the evaluative implications of the threat are less likely to engage in negative future expectations and consequently will be less inclined to use savings to secure their future. Another factor that might influence the effect of self-image threat on saving intentions is individuals' perceived quantity of social connections. Money and social connections are both psychological resources, and they have been shown to have the capacity to compensate for each other (e.g., U. G. Foa, 1971; Gronmo, 1988; Woodruffe, 1997). Thus, if we assume that individuals perceive financial resources as a means of coping with potential future crises (and therefore conserve them), it then seems reasonable that they would perceive possession of abundant social resources in a similar manner. Consequently, we expect the association between self-image threat and saving intentions to be attenuated among individuals who feel they have abundant social connections.

Below, we first review past literature on the psychological antecedents of individual financial saving intentions and then elaborate on the logic of why we expect threat to self-image to increase saving intentions, and under what conditions. Following this discussion, we present results from seven studies that offer convergent support for our predictions. We conclude with a discussion of the implications of the current findings for the individual financial decision-making literature and future research opportunities.

Individual Financial Saving

In Keynesian economics, saving is defined as refraining from spending one's entire current income on consumption (Katona, 1974). Typically, individuals save with the aim of achieving some type of goal, or multiple goals (e.g., Lewis, Webley, & Furnham, 1995; Wärneryd, 1999). Some individuals save money for long-term goals, such as having adequate financial resources after retirement or putting children through college, whereas others may save for a shorter-term goal, such as purchasing an Xbox next month or making a down payment on a new Tesla car.

There is vast research on the possible external and internal drivers of individuals' saving decisions. The external factors consist mainly of the features of the fiscal environment, such as inflation (Juster & Wachtel, 1972), capital gains (Friend & Lieberman, 1975), stock market wealth (Starr-McCluer, 2002), tax rates (Cheng, 1953; Juster & Wachtel, 1972) and scarcity of economic resources (Griskevicius et al., 2013; Shah et al., 2012). For example, periods of greater inflation have been associated with increased savings rates (Juster & Wachtel, 1972), whereas increases in capital wealth have been related to decreased savings (Friend & Lieberman, 1975). The external economic driver of scarcity has been found to diminish the inclination to save money. In particular, scarcity of economic resources shifts individuals' attention to focus to short-term needs at the expense of long-term planning, which, in turn, may lead individuals to engage more in overborrowing and less in saving (Shah et al., 2012). Scarcity of economic resources is also a function of early life environment, such that individuals who grew up in lower (as opposed to higher) socioeconomic status environments are likely to be more impulsive, take more risks, and be less prone to engage in saving behaviors (Griskevicius et al., 2013). The growing body of research about the internal factors that drive individual savings focuses primarily on psychological antecedents of savings, such as hope (Reimann, Nenkov, MacInnis, & Morrin, 2014) and self-control Gathergood, 2012. For example, Gathergood (2012) has shown that individuals with self-control problems have higher exposure to adverse events, possibly due to their impulsive behavior, resulting in suboptimal outcomes in saving decisions.

According to the Board of Governors of the United States Federal Reserve System (2015), saving constitutes an important measure of economic well-being. In other words, individuals' welfare should increase as they save more for the future, since saving offers a powerful path to future survival and personal sense of security. Given the important consequences of saving for the well-being of individuals and society as a whole, a deeper understanding of the psychological factors driving individual saving is warranted. To add to the literature in this field, we examine the role of self-image threats, and, specifically, negative future expectations triggered by a threat to one's self-perceptions, in driving individuals to save.

Threats to Self-Image and Their Consequences

Self-image threat is an experience that calls into question one's favorable views about oneself (Campbell & Sedikides, 1999; vanDellen, Campbell, Hoyle, & Bradfield, 2011). Threat to self-image may arise following a variety of events that reflect negatively on the self, either with regard to fundamental human needs, such as self-esteem, power, and control, or with regard to more specific important aspects of the self, such as intelligence or performance (Kay, Gaucher, McGregor, & Nash, 2010; Park & Maner, 2009). Self-image threat may be triggered by numerous types of everyday events and is therefore a common phenomenon. In the literature, self-image threat has been frequently operationalized as a failure experience, such as placing participants in a situation in which they explicitly receive or think about negative information that challenges a positive self-view of themselves (e.g., Campbell & Sedikides, 1999; Fein & Spencer, 1997).

Individuals are motivated to protect, maintain, or enhance the positivity of the self, and consequently act in ways to counter and minimize self-image threats when they experience them (Campbell

& Sedikides, 1999; Crocker & Park, 2004; Deci & Ryan, 2000; Steele, 1988). Vast research has investigated how people respond to negative information about the self (e.g., Brown & Dutton, 1995). Common responses to such threats include making external attributions for failure (e.g., Millimet & Gardner, 1972; Shrauger & Lund, 1975), focusing on perceived positive characteristics (e.g., Aronson, Blanton, & Cooper, 1995), engaging in risky behaviors (e.g., Baumeister, Heatherton, & Tice, 1993), and perusing compensatory consumption (e.g., Gronmo, 1988; Woodruffe, 1997). The common ground of these responses to threat consists of having short-term consequences. In the long term, however, these strategies are not guaranteed to produce positive feelings. This research explores a potential long-term strategic response to self-image threat, by focusing on the conditions under which threatened individuals may engage in saving for the future.

This long-term reaction relies on the notion that self-image-threatened individuals tend to extend their negative thoughts and feelings about themselves to other aspects of themselves, a phenomenon referred to as overgeneralization (Brown & Dutton, 1995; Kernis et al., 1989). Notably, these aspects may be unrelated to the initial negative outcome (Carver & Ganellen, 1983; Epstein, 1992). Such thoughts are likely to bring to the fore feelings of personal inadequacy or to lead to a reduction in one's sense of self-worth (Carver, Ganellen, & Behar-Mitrani, 1985). In this vein, Callan, Kay, and Dawtry (2014) have shown that a threat to self-esteem may engender a wide array of self-defeating beliefs and behaviors (e.g., self-handicapping, thoughts of self-harm, choosing to self-punish). Epstein (1992) indicates that some people, particularly those who are poor constructive thinkers (i.e., whose habitual cognitive processes interfere with their capacity to think in a manner that enables them to solve problems), generalize negative outcomes to future outcomes as well, such that they expect future outcomes to be as unfavorable as present outcomes.

Threats to Self-Image, Negative Future Expectations, and Saving

In the current research, we propose that self-image-threatened individuals might show a stronger intention to save money as a means of alleviating their concerns about the future, which result from the generalization of a present self-image threat to future outcomes. Several streams of economics and psychology literature support this proposition. For example, money represents one's achievements and success (Furnham & Argyle, 1998). Research has shown that the quantity of financial resources at a person's disposal influences how she perceives herself and how she is perceived by others. In particular, people usually perceive those who have more financial resources as being more competent (e.g., Christopher & Schlenker, 2000; Cuddy, Fiske, & Glick, 2008; Johannesen-Schmidt & Eagly, 2002). Thus, possession of larger quantities of financial resources (achieved by saving) may help individuals who experience a self-image threat feel more capable of coping with future difficulties that they might encounter.

Furthermore, saving could also relieve the worries and anxiety of self-image-threatened individuals (Goldberg & Lewis, 2000; Rubinstein, 1981; Zhang, 2009; Zhang & Baumeister, 2006). Saving monetary resources provides a buffer against income shocks and facilitates long-term planning (Modigliani, 1986). Money constitutes a resource that is essential in influencing individuals' perceived autonomy and freedom (Vohs, Mead, & Goode, 2006, 2008), and "provides a feeling of confidence that problems can be solved and needs can be met" (Zhou, Vohs, & Baumeister, 2009, p. 700). Possessing money makes people feel powerful and in control (Furnham, 1984), and predicts the extent to which people evaluate their lives positively and report having positive feelings (Diener, Tay, & Oishi, 2013). Thus, money conservation may buffer individuals against the negative thoughts and emotions that arise when they generalize present negative outcomes to future negative outcomes, following exposure to self-image threats (Kernis et al., 1989).

It is important to note that self-image threats and resource scarcity (e.g., Roux, Goldsmith, & Bonezzi, 2015; Shah et al., 2012) may have different impacts on people's financial saving intentions. While the scarcity of resources may sometimes be considered a threat to the self, individuals often feel that their resource scarcity is caused by temporary external factors (i.e., external structuralistic and external fatalistic factors; Feagin, 1972, 1975) and less by internal factors (i.e., internal-individualistic factors; Feagin, 1972, 1975; e.g., Bobbio, Canova, & Manganelli, 2010). Moreover, resource scarcity is known to activate a short-term focus, trigger impulsive spending as well as a preference toward short-term, high-interest loans (e.g., Shah et al., 2012). Thus, in contrast to environmental threats (e.g., scarcity), a threat to one's self-image is likely to elevate one's tendency not only to attribute the threat to internal factors, but also to expect negative future consequences (e.g., future personal financial crisis, future personal insecurity).

Taken together, we predict that self-image-threatened individuals will exhibit a stronger intention to conserve their monetary resources and save money for their future compared with individuals whose self-images are not threatened. In addition, we expect that the magnitude of this effect will be mediated by the extent to which individuals develop negative future expectations. We formally hypothesize the following:

> *Hypothesis 1:* Self-image-threatened (vs. nonthreatened) individuals will show a stronger intention to save money.

> *Hypothesis 2:* The extent to which individuals experience heightened negative future expectations underlies the effect of self-image threat (vs. no threat) on saving intentions.

A central premise of H_2 is that generalized negative future expectations are the key factor driving self-image-threatened individuals to save more. If this assumption is true, we should predict that when self-image-threatened individuals are encouraged to adopt positive future expectations, this tendency to save is attenuated. Specifically, we adopt a process-by-moderation approach (Spencer et al., 2005), and predict that positive future expectations will diminish the effect of self-image threat on saving intentions. In other words, adoption of positive future expectations is predicted to eliminate the difference between self-image threatened and nonthreatened individuals' willingness to save money.

> *Hypothesis 3:* The effect of self-image threat (vs. no threat) on individual saving intentions will be attenuated among individuals who are induced to adopt positive future expectations.

The Moderators

We further propose that the following conditions may influence the extent to which the effect of self-image threat on individual saving intentions is likely to occur.

Perceived Quantity of Social Connections

A potential moderator of the effect of self-image threat on individual saving intentions is related to the availability of alternative (nonmonetary) resources that might serve to enhance one's sense of security regarding the future. Threatened individuals may rely not only on monetary resources to counteract insecurity but also on other available psychological resources, including, for example, their social connections. Consistent with this notion, past literature has suggested that social connections constitute a psychological resource (U. G. Foa, 1971) that can potentially replace monetary resources. For example, Duclos et al. (2013) found that individuals who were deprived of social resources (e.g., excluded from a group) showed a higher compensatory desire for monetary resources. Moreover, the extent of one's social connections has been shown to have a direct effect on financial decisions. For example, Lunt and Livingstone (1991) have shown that saving intentions are linked to individuals' coping strategies, including the way they use social support. In addition, the classic work of Schachter (1959) revealed that individuals in a threatened situation (e.g., in a high-anxiety state) showed a greater increase in affiliation tendencies, suggesting that social connections could be potentially utilized as a resource to cope with self-threat.

Drawing from these observations, we predict that individuals who perceive themselves as having abundant social connections will be less vulnerable to the effects of a self-image threat, compared with individuals who perceive themselves as having few social connections. Consequently, the saving intentions of individuals with abundant social connections will be less influenced by self-image threat compared with the saving intentions of individuals with few social connections. We formally hypothesize the following:

> *Hypothesis 4:* The effect of self-image threat (vs. no threat) on individual saving intentions will be attenuated among individuals who perceive themselves as having many social connections.

Self-Affirmation

Self-affirmation is an alternative strategy to cope with self-image threats. Self-affirmation, which entails the explicit affirmation of a characteristic or value that individuals regard as highly important in their lives (e.g., Steele, 1988; Steele & Liu, 1983), enables the restoration of self-integrity and allows people to focus on self-image domains unrelated to the threat (e.g., Sherman & Cohen, 2006). For example, in a common self-affirmation procedure, participants choose a value or trait they consider very important and write about why it is important to them. Examples of valued domains used in self-affirmation interventions include relationships with family and friends, physical attractiveness, and creativity (e.g., Schmeichel & Martens, 2005). Such value-based self-affirmations have been shown to make people realize that their self-worth does not hinge on the threatened domains of self-image. As a result, these threatened individuals would be less likely to generalize the present self-image threat to expectations of their future outcomes. Consistent with this premise, past research has shown that self-affirmation can increase individuals' confidence in their ability to overcome future difficulties (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009).

We predict that self-image-threatened individuals who undergo such a process of self-affirmation will be less likely to generalize negative future expectations compared with threatened individuals who have not undergone a self-affirmation procedure. Consequently, the effect of self-image threat on saving intentions will be attenuated for these individuals. We formally hypothesize the following:

> *Hypothesis 5:* The effect of self-image threat (vs. no threat) on individual saving intentions will be attenuated among individuals who experience self-affirmation.

Beliefs in the Instrumentality of Money

The effect of self-image threat on saving decisions may be dependent on the extent to which individuals believe in the instrumentality of money. Money helps us to acquire the things we desire, but money also represents a higher level instrumentality, such as enabling people to achieve goals without the aid of others (e.g., Duclos et al., 2013; Lea & Webley, 2006; Tang, 1995). This instrumentality is what gives money the capacity to serve as a psychological resource, protecting individuals from negative psychological outcomes, as elaborated in previous sections.

As discussed above, we suggest that self-image-threatened individuals hold on to their money because it serves as a valuable resource to assure oneself in the future. Thus, the extent to which a self-image threat drives individuals to save money is dependent on the extent to which they attribute functional and symbolic value to monetary resources. Among self-image-threatened individuals who have weak beliefs about the instrumentality of money, the tendency to save may be attenuated. We formally hypothesize the following:

> *Hypothesis 6:* The effect of self-image threat (vs. no threat) on individual saving intentions will be attenuated among individuals who believe money is less instrumental.

Overview of Studies

We present seven studies to support our predictions, using both field data and experiments. In Study 1, using both a large-scale panel data set of individuals' financial holdings (Study 1A) and an online experiment (Study 1B), we show that self-image-threatened individuals (as opposed to nonthreatened individuals) are more likely to save for the long run. Study 2 rules out the alternative account of scarcity of economic resources as a possible driver of the effect. Study 3 provides evidence for the mediating role of negative expectations about the future. Study 4 uses a process-by-moderation approach (Spencer et al., 2005) to further test the role of negative future expectations in driving the effect. Study 5 shows that the effect of self-image threat on saving intentions is attenuated among individuals who feel they have abundant social connections. In Study 6, we show how self-affirmation may attenuate the effect of self-image threat on individual saving intentions.

Finally, Study 7 shows that the effect of self-image threat on saving is more likely to occur among individuals who believe money is instrumental and expect it to be useful in later stages of life. The full text of all measures in all studies can be found in the online supplemental materials.

We incorporated into our studies various reflections of self-image threat, including threats to one's perceptions of self-esteem, control, and competence. In doing so, we build on previous research that has demonstrated connections between these constructs and self-image threat (e.g., Anderson, John, & Keltner, 2012; Inesi, Botti, Dubois, Rucker, & Galinsky, 2011; Munichor & Steinhart, 2016). In addition, across studies, the current research uses diverse samples with a strong representation of the population. Specifically, in Study 1A, we analyze data from the Dutch National Bank Household Survey (DHS), a large national panel survey in the Netherlands. The panel survey is answered by all household members Aged 16 or over on the panel. The panel is run by CentERdata, a survey research institute at Tilburg University that specializes in Internet surveys. For Studies 1B and 7, we collected our data through a company using its online subject pool of more than 30,000 participants. The participants who registered for our studies were assigned a personal code enabling the company to remit payment for participation without revealing participants' identities. An e-mail notification was sent to each registrant, assigning him or her to one of the experimental conditions. Our samples in these studies consist of individuals with average age above 30; more than 50% were married and had at least a high school education. In Studies 2, 4, 5, and 6, we relied on the Amazon Mechanical Turk (MTurk) survey platform. Finally, in Study 3, we collected data from undergraduate students majoring in business; this population is expected to have some understanding of saving and money allocation decisions. The target sample size in these studies was conservatively selected on the basis of previous findings of research on threats to self-image (e.g., Fein & Spencer, 1997) and saving money (e.g., Cai et al., 2017). Power analyses through G*Power confirmed that our target sample sizes in most studies provide adequate power to detect moderate effects (e.g., Faul, Erdfelder, Buchner, & Lang, 2009; see the online supplemental materials for the power analysis for each individual study).

Study 1

Study 1 tested our basic hypothesis (H_1), according to which self-image-threatened individuals are predicted to have a greater propensity to save money compared with nonthreatened individuals. Specifically, we first used a large-scale secondary dataset to test the relationship between self-image threat and actual individual saving (Study 1A). Next, we used an online experiment (Study 1B) to validate the causal relationship between self-image threat and individual saving intentions.

Study 1A

We used data from the DHS, a panel survey comprising in-depth financial and personal information for a representative sample of Dutch households. Numerous studies in diverse fields have used the DHS as a reliable data source (e.g., Disatnik & Steinhart, 2015; Nyhus & Pons, 2005; van Rooij, Lusardi, & Alessie, 2011; Webley & Nyhus, 2006). We utilized the 2014 wave of the DHS (conducted during February–October 2014), which contains 1,266 individuals with income above zero (M_{age} = 53.53, 47% women).

We calculated individuals' ratio of financial saving ("B3B" in DHS) out of their calculated net income ("IB" in DHS) as the dependent variable. Due to the second-hand nature of this survey dataset, we selected three items ("CON09," "CON49," and "CON08," respectively, in the DHS): "I often make a mess of things," "I often feel blue," and "I am always well prepared" (reversed), to represent the extent to which individuals experience a self-image threat in their everyday lives. All three items were measured on a 5-point scale from 1 (*not at all applicable*) to 5 (*highly applicable*; $\alpha = .52$). To confirm that this set of items may serve as a proxy for such a threat, we conducted a pretest among 66 participants on MTurk (M_{age} = 33.30, 45.5% women) and found that these items correlated negatively ($r = -.58$) with the average score of the following items that measure self-image threat more directly (adapted from Munichor & Steinhart, 2016): (a) "Right now, I feel bad or good about myself" (1 = *feel bad about myself*, 7 = *feel good about myself*); (b) "Right now, I have high or low self-worth" (1 = *low self-worth*, 7 = *high self-worth*); and (c) "Right now, I have week or strong self-image" (1 = *weak self-image*, 7 = *strong self-image*; $\alpha = .96$). Finally, to control for other demographic variables that may have a direct influence on individuals' saving behavior, we included gender ("GESLACHT" in the DHS), and age as control variables in our model.

We regressed the saving ratio on self-image threat both without (Model 1) and with (Model 2) the control variables gender, age, and calculated income. The effect of self-image threat was significant in both models (Model 1: $b = 8.34$; $t(1265) = 2.210$, $p = .027$; Model 2: $b = 7.39$; $t(1262) = 1.96$, $p = .05$; Table 1), indicating that individuals' perceived chronic threat to self-image was positively correlated with their actual financial savings.

Study 1B

In Study 1B we used an experimental design to compare the high self-image-threat condition to a baseline condition and to a low self-image-threat condition. This study refines the observations obtained in Study 1A by showing that the effect is driven by the experience of self-image threat rather than by the absence of threat.

Table 1
Saving as a Function of Self-Image Threat (Study 1A)

Predictors	Model 1: Saving ratio	Model 2: Saving ratio
Intercept	−4.77 (6.92)^{ns}	4.52 (14.10)^{ns}
Self-image threat	8.34 (3.77)*	7.39 (3.78)*
Income		−.001 (.000)**
Gender		2.00 (4.83)^{ns}
Age		−.04 (.15)^{ns}
R^2	.004	.013
Overall F	4.884	4.02
df	1, 1265	4, 1262

Note. Entries represent unstandardized coefficients. Standard errors are reported in parentheses. *ns* = not statistically significant; *df* = degrees of freedom.
* $p \leq .05$. ** $p \leq .01$.

Two hundred participants (M_{age} = 31; 50% women) from an online panel took part in this experiment in exchange for monetary compensation. Participants were randomly assigned to one of three (self-image threat: low vs. high vs. baseline) between-subjects conditions. Participants in the low self-image threat and high self-image threat conditions first completed a cognitive task that manipulated self-image threat (e.g., Munichor & Steinhart, 2016), whereas participants in the baseline condition skipped this procedure. Specifically, we asked participants in the first two conditions to complete a sudoku game (i.e., a number-placement puzzle). They first read a short description of how to play the game and were then directed to a web page with a standard sudoku game to work on (a 9 × 9 matrix with 47 empty cells).

After participants had spent five minutes on the sudoku game page, they were advanced to the next web page and presented with the correct solutions. The computer calculated and reported participants' correct answers in the sudoku task. Then, participants were presented with a performance table, which we used to manipulate self-image threat levels. This performance table purportedly described the average scores of correct answers for the top third, middle third, and bottom third of players in the general population. Participants who had been assigned to the high self-image threat condition were told their scores were in the bottom third of the performance table (i.e., they had performed worse than most others), whereas participants in the low self-image threat condition were told their scores were in the top third of the performance table (i.e., they had performed better than most others). To confirm the validity of this manipulation, we conducted a pretest among 40 participants from the same online panel (M_{age} = 29; 48% women) who were randomly assigned to either the high or the low self-image threat condition and completed the self-image threat manipulation accordingly. Then, participants reported their perceived self-value on a 7-point scale from 1 (*low self-value*) to 7 (*high self-value*; Munichor & Steinhart, 2016). As expected, participants in the high self-image threat condition reported lower self-value (M = 3.15, SD = 1.23) than did participants in the low self-image threat condition (M = 4.05, SD = 1.57; $t(38)$ = 2.02, p = .05).

Next, participants in all three conditions responded to two measures regarding their saving tendencies. First, participants completed a nine-item questionnaire capturing general saving intentions (e.g., "I save now to prepare for my old age"; Yamauchi & Templer, 1982; α = .85) on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Then, participants were told to imagine they had just received 1,250 USD and were requested to indicate how many dollars they would put into a savings account (e.g., Oppewal, Paas, Crouch, & Huybers, 2010; Paas, Bijmolt, & Vermunt, 2007). We calculated each participant's saving ratio (i.e., the percentage of money he or she was willing to save, of the total given amount).

An analysis of variance (ANOVA) of general saving intentions as a function of self-image threat condition revealed a significant effect (F[2, 197] = 3.04, p = .050; η^2 = .03). Consistent with H_1, least significant difference (LSD) post hoc comparisons (e.g., Heatherton, Herman, & Polivy, 1991) showed that participants in the high self-image threat condition reported higher general saving intentions (M = 5.83, SD = 0.74) than did participants either in the low self-image threat condition (M = 5.37, SD = 1.28; p = .03) or in the baseline condition (M = 5.48, SD = 0.92; p = .04). The difference between the latter two conditions was not significant (p = .52).

Similarly, an ANOVA of saving ratio as a function of self-image threat condition also revealed a significant effect (F[2, 197] = 3.22, p = .04; η^2 = .03). Participants in the high self-image threat condition indicated a higher saving ratio (M = 72.18%, SD = 26.17%) compared with participants in the low self-image threat condition (M = 60.04%, SD = 31.49%; p = .04) and participants in the baseline condition (M = 60.64%, SD = 27.14%; p = .02). The difference between the latter two conditions was, again, not significant (p = .93).

Discussion

The results of Study 1—based on both a large-scale secondary dataset (Study 1A) and an online experiment (Study 1B)—show that when individuals experience either chronic or situational self-image threat they are more likely to save money. Of importance, Study 1B shows not only the association between these constructs but also the causal relationships between them. It demonstrates that individuals who are induced to experience a high self-image threat have a greater intention to save money compared with individuals who are induced to experience a low self-image threat or with individuals who have not undergone a self-image threat manipulation. Moreover, Study 1B shows that high self-image threat increases intention to save money, whereas low self-image threat does not decrease monetary saving, compared with a baseline condition. This finding is consistent with our prior theorizing that as a negative and aversive state, self-image threat decreases people's optimism about their future, and therefore elicits saving intentions, whereas a weak threat to self-image threat may not necessarily lead to the reverse effect.

Study 2

Study 2 aimed to show that the effect of self-image threat on individual saving intentions differs from the effect on savings of external threats such as economic scarcity. We illuminate this divergence with an experiment that manipulates both self-image threat and scarcity.

Method

One hundred seventy-five participants (M_{age} = 33.38; 45% women) completed the experiment using the MTurk survey platform in exchange for monetary compensation. We randomly assigned participants to one of three between-subjects conditions (low self-image threat vs. high self-image threat vs. resource scarcity). Participants completed two ostensibly independent tasks. In the first task, we manipulated self-image threat. One third of the participants were asked to describe an event in which they had experienced failure asa result of their own actions (the high self-image threat condition). One third of the participants were asked to describe an event in which they had experienced success as a result of their own actions (the low self-image threat condition). The remaining participants were asked to describe an event in which they had felt that their resources were insufficient or limited (the resource scarcity condition; Roux et al., 2015).

To confirm the validity of this manipulation, we conducted a pretest among 63 participants on MTurk (M_{age} = 35; 38%

women). Participants were randomly assigned to either the high self-image threat, the low self-image threat, or the resource scarcity condition, and they completed the manipulations accordingly. Then, participants reported the extent to which they agree with the statement on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*): "I feel bad about myself." As expected, participants in the high self-image threat condition reported feeling worse about themselves ($M = 4.32$, $SD = 2.14$) than did participants in the low self-image threat condition ($M = 1.78$, $SD = 1.22$; $p < .001$) or those in the scarcity condition ($M = 2.87$, $SD = 1.89$; $p = .01$). The latter two conditions were marginally different from each other ($p = .063$). Moreover, as a typical manipulation check for resource scarcity, participants also indicated their agreement with the statement "I need to acquire more resources" (1 = *extremely disagree*, 7 = *extremely agree*; e.g., Roux et al., 2015). Consistent with our expectations, we found that participants in the scarcity condition agreed more strongly with this statement ($M = 5.70$, $SD = 1.22$) than did participants in the high self-image threat condition ($M = 4.64$, $SD = 1.76$, $p = .026$) or participants in the low self-image threat condition ($M = 4.72$, $SD = 1.67$, $p = .052$). Participants' responses in the latter two conditions did not differ ($p = .86$).

In the second task, we used a saving measure adapted from the work of Tam and Dholakia (2014), under which participants were asked to indicate the amount in United States dollars that they would put in their savings accounts per year out of their monthly salary. The amount that participants indicated that they would put into savings ranged from 0 USD to 10,000 USD ($M = 2{,}938.15$ USD, $SD = 3{,}044.35$ USD). A Kolmogorov–Smirnov test showed that the distribution of this variable deviated significantly from normal ($D = .15$, $p < .0001$). We therefore log-transformed this measure in further analyses.

Results

An ANOVA of the log-transformed saving amounts as a function of experimental condition (high self-image threat, low self-image threat, or resource scarcity) revealed a significant effect ($F[2, 172] = 3.50$, $p = .03$; $\eta^2 = .04$).[1] Using LSD post hoc comparisons (e.g., Heatherton et al., 1991), we found that participants in the high self-image threat condition indicated that they would put aside a higher savings amount ($M = 3.31$, $SD = .48$) compared with participants in the low self-image threat condition ($M = 3.04$, $SD = .69$; $p = .05$) and compared with participants in the resource scarcity condition ($M = 2.97$, $SD = 1.01$; $p = .01$). The difference between participants' responses in the low self-threat condition and resource scarcity conditions was not found to be significant ($p = .61$).

Discussion

The results of Study 2 replicate the findings of Study 1 and demonstrate that self-image-threatened individuals are willing to save more money compared with nonthreatened individuals. Importantly, as we expected, participants' tendency to save money does not increase when individuals experience a strong sense of resource scarcity. This is consistent with our prediction that although resource scarcity may increase saving if it is perceived as a self-image threat, short-term focus and impulsive spending triggered by resource scarcity (e.g., Shah et al., 2012) are likely to offset its effect. Moreover, in the pretest of this study we found that the classic manipulation of scarcity adopted from past literature (e.g., Fan, Li, & Jiang, 2018; Roux et al., 2015) led to relatively negative self-images, but significantly less negative than those in the high self-image threat condition, in which participants' self-image was explicitly threatened. This finding is consistent with our speculation that resource scarcity is not necessarily seen as a self-threat.

Study 3

Recall that we propose that self-image-threatened individuals generalize their negative self-perceptions beyond the present situation, such that they also perceive the future negatively. In particular, they may develop negative expectations, such as expectations of experiencing a financial difficulty and/or personal insecurity in the future (e.g., MacLeod, Williams, & Bekerian, 1991). These negative future expectations, in turn, trigger a desire to save, because financial savings relieve worry and anxiety (e.g., Goldberg & Lewis, 2000). In Study 3, we tested this proposed underlying mechanism by directly examining the mediating role of negative future expectations in the effect of self-image threat on saving.

Method

Sixty undergraduate students ($M_{age} = 22$; 45% women) participated in this experiment for course credit. We randomly assigned participants to one of two (self-image threat: high vs. baseline) between-subjects conditions.

Participants completed two ostensibly independent tasks. In the first task, we manipulated self-image threat. Similarly to Study 2, participants were either asked to describe an event in which they had experienced failure as result of their own actions (high self-image threat condition), or were not presented with such a recall task (baseline condition). To measure participants' negative expectations about the future, participants reported the extent to which they expected (a) to have unforeseen problems in the future, and (b) to be unable to cope with their responsibilities in the future (1 = *not at all*, 7 = *very much*; $r = .50$, $p < .001$; adapted from MacLeod et al., 1991). Participants were also asked to imagine that they had unexpectedly received 2,500 USD, and were asked to indicate how much of this sum they would like to deposit in a long-term savings account. We calculated each participant's saving ratio (i.e., the percentage of the money received that he or she was willing to save for the long term).

[1] To control for other demographic variables that may directly influence individuals' saving intentions, we measured participants' perceived relative income (Crawford Solberg, Diener, Wirtz, Lucas, & Oishi, 2002; Shoham, Moldovan, & Steinhart, 2017; Solomon, Mikulincer, & Hobfoll, 1986) by asking participants to describe their income (1 = *below average*, 2 = *average*, 3 = *above average*). The observed effect remains after controlling for perceived relative income. For the comparison between results with and without this control variable; see Table S1 in the online supplemental materials.

Results

An ANOVA of saving ratio as a function of self-image threat condition revealed a significant effect ($F[1, 58] = 5.12$, $p = .03$; $\eta^2 = .08$). The saving ratio was higher for participants in the high self-image threat condition ($M = 65.48\%$, $SD = 24.51\%$) compared with the saving ratio of participants in the baseline condition ($M = 50.52\%$, $SD = 26.74\%$).

An ANOVA of negative future expectations as a function of self-image threat condition also revealed a significant effect ($F[1, 58] = 4.03$, $p = .05$; $\eta^2 = .07$). Participants in the high self-image threat condition indicated more negative expectations about their futures ($M = 3.81$, $SD = 1.24$) compared with participants in the baseline condition ($M = 3.19$, $SD = 1.14$). More importantly, bootstrapping methods (PROCESS Model 4, with 5,000 resamples; Hayes, 2013) confirmed the mediating role of negative future expectations in the effect of self-image threat (0 = *baseline*, 1 = *high self-image threat*) on participants' saving ratios ($b = .04$, $SE = .02$; 95% CI [.0026,.0994]). In the presence of negative expectations about the future, the direct effect of self-image threat on saving ratio became nonsignificant ($b = .07$, $SE = 1.71$; 95% CI [.0927, −0.0194]).

Discussion

The results of Study 3 replicate the findings of Studies 1 and 2 regarding the linkage between self-image threat and willingness to save. More importantly, the results of the mediation analysis in this experiment provide direct support for H_2; that is, the effect of high self-image threat on individual saving is driven by the tendency of self-image-threatened individuals to generalize negative expectations about their futures.

Study 4

Study 4 further examined the role of future expectations in driving the tendency of self-image-threatened individuals to save. Specifically, in this study we predicted that inducing positive future expectations would attenuate the differences in saving tendency between self-image threatened and nonthreatened individuals. For this purpose, in addition to manipulating participants' level of self-image threat, we manipulated their valence of future expectations, such that some participants were induced to hold positive future expectations, whereas others were induced to possess negative future expectations.

Method

One hundred eighty-eight participants ($M_{age} = 36$; 39% women) completed the experiment using the MTurk survey platform in exchange for monetary compensation. We randomly assigned participants to one of four conditions in a 2 (self-image threat: low vs. high) × 2 (future expectations: positive vs. negative) between-subjects design.

Participants completed two ostensibly independent tasks. Self-image threat was manipulated via a recall task, in which participants were asked either to describe an event in which they felt bad about themselves (the high self-image threat condition), or an event in which they felt good about themselves (the low self-image threat condition). Then, in the second task, we manipulated the valence of future expectations. Specifically, we presented all participants with a brief article about an academic study that had supposedly examined how people think about their future. Half of the participants read that recent research found that most people think about the future far more negatively than the future turns out to be. The other half of participants read that this research found that most people think about the future far more positively than it turns out to be.

Participants then indicated the percentage of monthly salary they ideally planned to deposit into their savings accounts, ranging from 0% to 100% ($M = 36.31\%$, $SD = 24.18\%$). This allocation served as our dependent measure. Finally, to control for differences in participants' monthly income, they stated the amount of money they make every month before taxes ($M = 3{,}745.04$ USD, $SD = 2{,}421.26$ USD). A Kolmogorov–Smirnov test showed that the distribution of participants' monthly income deviated significantly from normal ($D = .12$, $p < .0001$). We therefore log-transformed this measure in further analyses.

As a manipulation check of the self-image threat recall task, we asked participants to indicate how they felt at that moment (1 = *very bad*, 7 = *very good*) and how they perceive their self-image (1 = *weak self-image*, 7 = *strong self-image*). To check whether people indeed follow the manipulation of negative or positive future expectations, we asked participants to estimate the types of future expectations that they are likely to incorporate in their decision making (1 = *their future negative expectations*, 7 = *their future positive expectations*).

Results

As expected, participants in the high self-image threat condition reported feeling less positively about themselves ($M = 3.41$, $SD = 1.89$) than participants in the low self-image threat condition ($M = 6.26$, $SD = 1.08$, $t[187] = 12.69$, $p < .001$). Moreover, participants in the high self-image threat condition reported having a lower self-image ($M = 3.56$, $SD = 1.98$) than those in the low self-image threat condition ($M = 6.27$, $SD = 1.13$, $t[187] = 11.60$, $p < .001$). In addition, in line with our predictions, participants in the positive future expectations condition reported that people are more likely to incorporate positive expectations in their decision making ($M = 5.22$, $SD = 1.26$) than those in the negative future expectations condition ($M = 3.51$, $SD = 1.77$, $t[187] = 7.59$, $p < .001$).

An ANOVA of the planned saving percentage as a function of self-image threat and valence of future expectations conditions, controlling for participants' monthly income, revealed a marginally significant two-way interaction effect ($F[1, 184] = 3.73$, $p = .055$; $\eta^2 = .02$). As presented in Figure 1, in the negative future expectations condition, participants in the high self-image threat condition planned to save more ($M = 42.08\%$, $SD = 28.14\%$) compared with participants in the low self-image threat condition ($M = 30.56\%$, $SD = 21.72\%$, $F[1, 184] = 4.30$, $p = .04$). However, when participants were induced to have positive future expectations, the effect was eliminated, and participants in the low and high self-image threat conditions indicated similar saving intentions ($M = 35.00\%$, $SD = 24.01\%$ vs. $M = 37.57\%$, $SD = 21.49\%$, respectively; $F[1, 184] = .44$, $p = .51$).

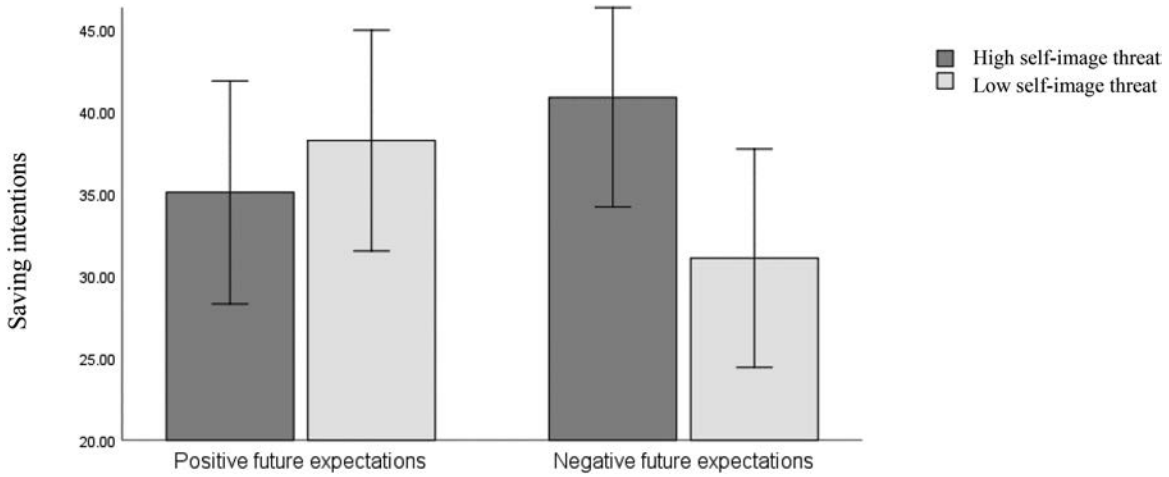


Figure 1. Saving intentions as a function of self-image threat and future expectations conditions (Study 4).

Discussion

The results of Study 4 replicate the findings of our prior studies regarding the linkage between self-image threat and willingness to save money. More importantly, the results of the valence of future expectations manipulation in this experiment provide direct support for the role of negative future expectations in driving the effect.

Study 5

Study 5 tested a potential moderator of the relationship between self-image threat and saving intentions, namely, perceived quantity of social connections. Given that social connections may substitute for money as a psychological resource that buffers individuals from anxiety about the future (e.g., U. G. Foa, 1971; Gronmo, 1988; Woodruffe, 1997), we expected the observed effect of self-image threat on individual saving intentions to be attenuated among individuals who report having many (as opposed to few) social connections (H_4).

Method

We recruited 217 participants (M_{age} = 34; 54% women) from the same online panel used in Study 4 to take part in this experiment in exchange for monetary compensation. Participants were randomly assigned to one of four conditions in a 2 (self-image threat: high vs. low) × 2 (perceived quantity of social connections: few vs. many) between-subjects experimental design.

Participants completed two ostensibly independent tasks. In the first task, we manipulated self-image threat in the same manner as in Study 4. Participants were either asked to describe an event in which they felt bad about themselves (high self-image threat condition), or to describe an event in which they felt good about themselves (low self-image threat condition).

After the self-image threat manipulation, participants completed a series of items about their social connections. Specifically, they were asked to indicate: (a) the number of friends they meet in an average week, and (b) the number of friends they talk to on the phone in an average week. As in Study 2, after each answer, participants were presented with a statistics table that purportedly divided the general population into three groups, according to their responses. Participants in the many-social-connections condition were shown a table in which their responses put them in the top category, whereas participants in the few-social-connections condition were shown a table in which their responses put them into the bottom category. As a check of our social connections manipulation, we asked participants to rate the number of their friends on a 7-point scale from 1 (*few*) to 7 (*many*).

Then, all participants were asked to imagine that they had just received 500 USD and indicate how many dollars they would deposit in a savings account. A Kolmogorov–Smirnov test showed that the distribution of this variable deviated significantly from normal (D = .10, $p < .0001$). We therefore log-transformed this measure in further analyses.

Results

Participants in the few-social-connections condition reported having fewer friends (M = 3.04, SD = 1.82) than participants in the many-social-connections condition (M = 3.52, SD = 1.81, $t[215] = 1.95$, $p = .05$).

An ANOVA of the log-transformed intended saving amounts as a function of self-image threat and perceived quantity of social connections conditions revealed a significant 2-way interaction effect ($F[1, 213] = 4.79$, $p = .03$; $\eta^2 = .02$). As presented in Figure 2, in the few-social-connections condition, participants in the high self-image threat condition intended to deposit a larger amount of money in savings (M = 2.37, SD = .24) than did participants in the low self-image threat condition (M = 2.12, SD = .67, $F[1, 213] = 4.75$, $p = .03$).[2] In contrast, in the many-social-connections condition, participants in the high self-image threat condition did not differ significantly from those in the low self-image threat condition in terms of the amount of money they indicated they would deposit into savings (M = 2.18, SD =

[2] For a comparison between results with and without controlling for participants' perceived relative income; see Table S1 in the online supplemental materials.

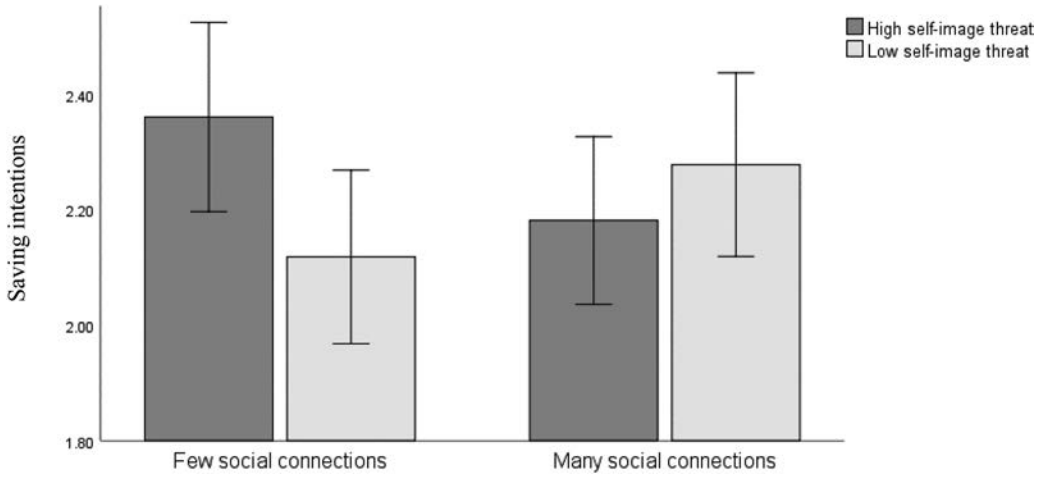


Figure 2. Saving intentions as a function of self-image threat and perceived quantity of social connections conditions (Study 5).

.72 vs. $M = 2.28$, $SD = .44$, respectively; $F[1, 213] = .81$, $p = .37$).

Discussion

The results of Study 5 reveal a possible means of overriding individuals' tendency to increase savings under self-image threat: specifically, priming individuals to think of an alternative resource that might serve as a buffer against such negative experiences. In line with H_4, we observed that the propensity to save money was reduced among self-image-threatened individuals who perceived themselves as having many (as opposed to few) social connections.

We argued that perceived quantity of social connections moderates the effect of self-image threat on saving intentions because social connections may substitute for money as a psychological resource. It is important to note that one alternative explanation of our findings in this study is that perceived quantity of social connections could potentially relieve individuals' sense of threat, reducing the downstream effect on the saving intention. This alternative explanation, nevertheless, does not contradict our proposed mechanism underlying the effect of self-image threat on saving intention.

Study 6

In this study, we explore how self-affirmation may moderate the effect of self-image threat on saving intentions. Self-affirmation is expected to make people realize that their self-worth does not hinge upon the threatened domains of self-view; consequently, these threatened individuals would be less likely to generalize their present threatened self-view to expectations of their future outcomes. Accordingly, we predict that self-affirmation will reduce the potential consequences of self-image threat by reducing concerns about negative future expectations, therefore diminishing the effect of self-image threat on individual saving intentions (H_5). Drawing on this reasoning, in Study 6 we sought not only to replicate the latter effect but also to identify a means of attenuating it—namely, by reducing self-image-threatened individuals' concerns of negative future outcomes by reflecting on important aspects of their lives that are independent of the threat.

Method

Two hundred twenty-four participants ($M_{age} = 35.92$; 45% women) completed the experiment using the MTurk survey platform in exchange for monetary compensation. We randomly assigned participants to one of four conditions in a 2 (self-image threat: low vs. high) $\times$ 2 (values-affirmation: affirmation vs. control) between-subjects condition design.

Participants completed three ostensibly independent tasks. In the first task, we manipulated self-image threat in the same manner as in Study 2. In the second task, we used a self-affirmation manipulation adopted from Crocker, Niiya, and Mischkowski (2008). Specifically, participants were asked to rank a list of six values (business; art—music—theater; social life—relationships; science—pursuit of knowledge; religion—morality; government—politics) in order of importance, from 1 (*most important*) to 6 (*least important*). Then, in the values-affirmation condition, participants wrote about the value that they consider to be most important and why it is important and meaningful to them; in the control condition, participants wrote about the value they consider least important and why it might be important and meaningful to other people.

In the third task, as in Study 2, participants were asked to indicate the amount in United States dollars that they would deposit in their savings accounts per year out of their monthly salary. The amount that participants indicated that they would deposit into savings ranged from 0 USD to 10,000 USD ($M =$ 2,648.83 USD, $SD =$ 2,742.20). A Kolmogorov–Smirnov test showed that the distribution of this variable deviated significantly from normal ($D = .19$, $p < .0001$). We therefore log-transformed this measure in further analyses.

Results

An ANOVA of the log-transformed intended saving amount as a function of self-image threat and values-affirmation conditions

revealed a significant two-way interaction effect ($F[1, 220] = 4.66$, $p = .03$; $\eta^2 = .02$). As presented in Figure 3, in the absence of self-affirmation, participants in the high self-image threat condition intended to save a larger sum of money ($M = 3.21$, $SD = .81$) than did participants in the low self-image threat condition ($M = 2.94$, $SD = .85$, $F[1, 220] = 3.93$, $p = .05$).[3] In contrast, in the presence of self-affirmation, participants in the high self-image threat condition did not differ significantly from those in the low self-image threat condition in terms of the sum of money they indicated they would deposit into savings ($M = 3.04$, $SD = .63$ vs. $M = 3.19$, $SD = .55$, respectively; $F[1, 220] = 1.45$, $p = .23$).

Discussion

The results of Study 6 replicate the findings of Studies 1 to 5 by showing that self-image-threatened individuals are willing to save more money compared with nonthreatened individuals. More importantly, this study provides direct support to H_5 by showing that the effect of self-image threat on saving intentions is eliminated after self-affirmation.

Interestingly, saving intentions of nonthreatened participants who completed the value affirmation task are unexpectedly high. We speculate that this data pattern emerges because that self-affirmation may increase directionally the general tendency to save money, across self-image threat conditions. This speculation is in line with Ferrer and Cohen (2018)'s proposition that value affirmation promotes positive behavior change and adaptive outcomes, such as saving money and health lifestyles. Moreover, Weaver, Vandello, and Bosson (2013) also show that affirmations reduce the tendency to take financial risks. Thus, even though the main effect of value affirmation is not significant, it is possible this unexpected data pattern is driven by the general effect of self-affirmation on saving.

Study 7

An underlying assumption of our theorizing is that individuals generally believe that money is instrumental and they expect it to be a valuable asset in the future; that is, they perceive saving money as a worthwhile act that might assist them in repairing their damaged self-view and create a sense of assurance and certainty about their future. Following this logic, we further predicted that the effect of self-image threat on saving intentions would be attenuated among individuals who question the instrumentality of money. That is, we should not expect individuals who do not believe that money is instrumental to use financial saving as a means of repairing a damaged self-image (H_6). Study 7 tested the moderating role of money-instrumentality beliefs.

Method

Eighty participants ($M_{age} = 37$; 53% women) from the same online panel used in Study 2A participated in this experiment in exchange for monetary compensation. Participants were randomly assigned to one of three (self-image threat: high vs. low vs. baseline) between-subjects conditions.

Participants in the high self-image threat and low self-image threat conditions first took part in the self-image threat manipulation task that was used in Study 1B (the sudoku task), whereas participants in the baseline condition skipped this procedure. After participants completed the sudoku task, they were asked to imagine they had just received 2,500 USD and asked to indicate how many dollars they would deposit in a savings account. We calculated each participant's saving ratio (i.e., the percentage of the total given amount that he or she was willing to save).

Finally, we measured participants' beliefs about the instrumentality of money for achieving one's goals in life. We asked participants to indicate their level of agreement with two statements adapted from Tang (1995) and Duclos et al. (2013) (i.e., "Money allows me to have freedom in making choices," and "Money allows me to pursue activities that I like"; $r = .77$, $p < .001$), on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). We averaged these two items to create an index of money-instrumentality beliefs, which we subsequently evaluated as a potential moderator.

Results

An ANOVA of saving ratio as a function of self-image threat condition revealed a significant effect ($F[2, 77] = 3.06$, $p = .05$; $\eta^2 = .07$). In line with H_1, LSD post hoc comparisons showed that participants in the high self-image threat condition indicated a higher saving ratio ($M = 68.62\%$, $SD = 26.45\%$) compared with participants in the low self-image threat condition ($M = 54.60\%$, $SD = 22.82\%$; $p = .05$) and participants in the baseline condition ($M = 53.08\%$, $SD = 27.68\%$; $p = .03$). The difference between the latter two conditions was not significant ($p = .83$).

Self-image threat conditions did not influence participants' money-instrumentality beliefs ($F[2, 77] = .76$, $p = .47$; $\eta^2 = .02$). Specifically, money-instrumentality beliefs remain stable across the high self-image threat condition ($M = 5.18$, $SD = 1.36$), the low self-image threat condition ($M = 5.60$, $SD = 1.09$), and the baseline condition ($M = 5.44$, $SD = 1.33$).

We then regressed the saving ratio on self-image threat, which was coded as two dummy variables: $\times 1$ (1 = *high self-image threat*, 0 = *low self-image threat and baseline*), $\times 2$ (1 = *low self-image threat*, 0 = *high self-image threat and baseline*), money-instrumentality belief (mean-centered, $M = 5.42$), and their interaction terms. As presented in Table 2 and schematically illustrated in Figure 4 (using the mean of money instrumentality, and one standard deviation below [low levels] and above [high levels] the mean to demonstrate the effect), the effect of high self-image threat (as distinguished from baseline and low self-image threat; $\times 1$) on saving ratio was significant ($b = .14$; $t_{(74)} = 2.09$, $p = .04$).

Moreover, the interaction of high self-image threat (X1) and money-instrumentality belief was marginally significant ($b = .100$; $t_{(74)} = 1.73$, $p = .09$). Because the proposed moderator, money-instrumentality belief, was a continuous variable, we used the Johnson-Neyman "floodlight" approach recommended in recent literature (e.g., Disatnik & Steinhart, 2015; McClelland, Lynch, Irwin, Spiller, & Fitzsimons, 2015; Spiller, Fitzsimons, Lynch, & McClelland, 2013) to explore this interaction. We found that, in line with our predictions, the effect of high self-image

[3] For a comparison between results with and without controlling for participants' perceived relative income; see Table S1 in the online supplemental materials.

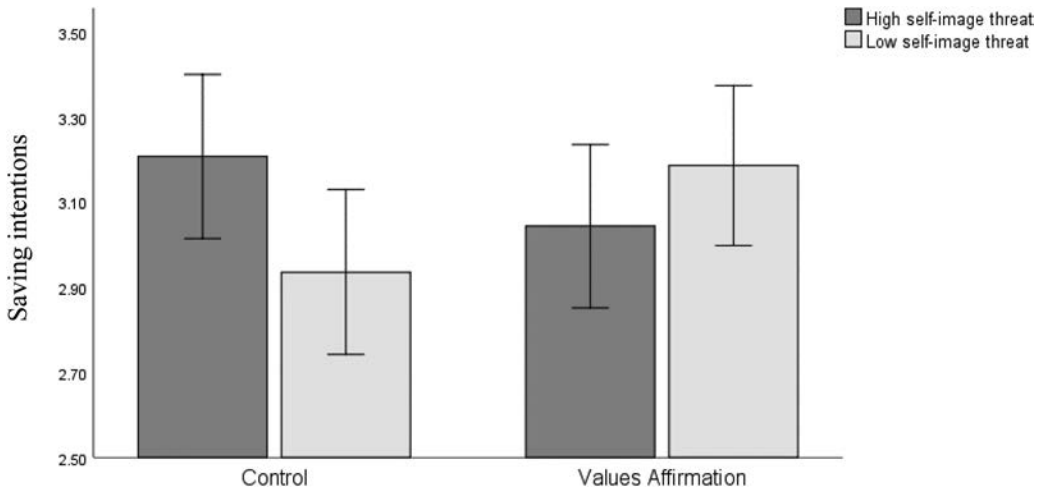


Figure 3. Saving intentions as a function of self-image threat and self-affirmation conditions (Study 6).

threat (vs. low self-image threat and baseline) was significant when the belief in money instrumentality was above 5.5 ($b = .15$; $t_{(74)} = 2.22$, $p = .03$). This finding suggests that, as expected, participants who held stronger beliefs in the instrumentality of money saved more money after experiencing high self-image threat. Among participants with weak beliefs in the instrumentality of money, self-image threat had no effect on the saving ratio.

Discussion

The results of Study 7, which measured belief in money instrumentality, confirm our prediction that belief in money instrumentality moderates the effect of self-image threat on individual saving. That is, as we observed in our previous studies, participants who were induced to experience high self-image threat were more willing to save money compared with participants who were induced to experience low self-image threat or whose self-image threat was not manipulated; this effect was more salient among individuals who believed more strongly that money is instrumental to them. This finding provides further support to our proposed underlying mechanism.

Table 2
Saving Intentions as a Function of Self-Image Threat and Participants' Money-Instrumentality Beliefs (Study 5)

Predictors	Saving intentions
Intercept	.76 (.21)**
Self-image threat (X1)	.14 (.07)*
Self-image threat (X2)	−.001 (.07)^{ns}
Money-instrumentality belief	−.042 (.038)^{ns}
Self-Image Threat (X1) × Money-Instrumentality Belief	.100 (.058)†
Self-Image Threat (X2) × Money-Instrumentality Belief	−.023 (.054)^{ns}
R^2	.14
Overall F	2.471*
df	5, 74

Note. In the regression reported in the table, the saving ratio is the dependent variable. For the predictors, money-instrumentality belief is a continuous variable that takes values from 1 to 7, and self-image threat is represented by two dummy variables (X1: 1 = *high self-image threat* and 0 = *low self-image threat or baseline*; ×2: 1 = *low self-image threat* and 0 = *high self-image threat or baseline*). Entries represent unstandardized coefficients. Standard errors are reported in parentheses. *ns* = not statistically significant; *df* = degrees of freedom.
† $p \leq .10$. * $p \leq .05$. ** $p \leq .01$.

General Discussion

The current research shows that threat to self-image spurs individual financial saving intentions, and identifies specific drivers and boundary conditions of this effect. We show that self-image-threatened (vs. nonthreatened) individuals possess heightened negative expectations about their future and therefore are more inclined to save their monetary resources. This propensity diverges from the effect of external threats (such as scarcity of economic resources) on saving, and it is more likely to occur among individuals with strong rather than weak beliefs in the instrumentality of money. We further demonstrated that the relationship between

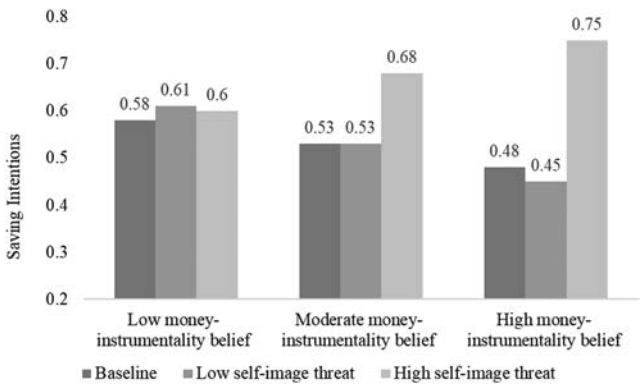


Figure 4. Illustration of the moderating effect of money instrumentality belief (Study 7). Money-instrumentality beliefs are divided into low beliefs (1 *SD* below the mean), moderate beliefs (the mean scale of money-instrumentality), and high beliefs (1 *SD* below the mean).

self-image threat and saving intentions is attenuated under each of the following conditions: (a) when individuals are induced to adopt positive future expectations, (b) when individuals perceive themselves as having abundant social connections, and (c) when self-affirmation directs individuals' attention to important aspects of their lives that are independent of the threatened aspects of the self.

Theoretical Contribution

The current research contributes to our understanding of the reasons that motivate individuals to save for the future. Within the context of saving decisions, this issue has received considerable attention recently (e.g., Bryan & Hershfield, 2012; Cai et al., 2017; Canova et al., 2005; Kornadt et al., 2015). We show that when individuals experience a threat to their self-image, they report higher saving intentions, as individuals may use savings to protect themselves against future shocks. This effect is a function of their negative expectations about their future outcomes. Further supporting this account, we show that when alternative means of coping with self-image threat is provided—specifically, self-affirmation (Study 6)—their likelihood of engaging in future saving diminishes.

In examining antecedents of long-term saving, this research separately considers threat to self-image, an internal threat to one's self-perceptions, and resource scarcity, a threat from the external environment. Under certain circumstances, these two types of threat may influence saving intentions similarly—for example, if individuals attribute their resource scarcity to internal factors. However, we suggest that, in most cases, these threats have distinct effects on saving intentions. Indeed, in our analyses, the effect of heightened resource scarcity perceptions on saving intentions was similar to that of nonthreatened individuals, and differed significantly from that of self-image- threatened individuals (Study 2). These results may provide additional support to past research that found that economic scarcity may lead individuals to focus on short-term needs over long-term planning and therefore to save less (Shah et al., 2012).

The current research also sheds light on coping strategies of individuals who experience a self-image threat. Specifically, prior research has shown that self-image-threatened individuals tend to generalize the negative implications of a possible threat and generate negative expectations about their futures (Carver et al., 1985; Kernis et al., 1989). Our research supports this perspective and indicates that such individuals employ a long-term coping strategy: saving monetary resources to protect themselves from future catastrophes.

Notably, by showing that saving intentions triggered by self-image threat are mediated by negative future expectations, the current findings suggest that financial saving differs fundamentally from alternative present-focused coping strategies related to monetary transactions such as retail therapy (Rick, Pereira, & Burson, 2014) or compensatory consumption (Landis & Gladstone, 2017), which individuals employ to overcome their low self-perceptions instantly via purchases, in general or specifically, of products that are associated with status or intelligence. In particular, the current research shows that self-image-threatened individuals prefer to save money in order to alleviate their worries and anxiety, and to gain a sense of assurance and certainty about the future (e.g., Goldberg & Lewis, 2000). In contrast, retail therapy and compensatory consumption may serve as immediate means of coping with low self-perceptions in certain contexts (e.g., Greenberg & Pyszczynski, 1985). In real life, decisions about saving and decisions about purchasing are often made independently, therefore we do not predict that when self-view is threatened, the long-term coping of saving will always override the short-term coping of purchasing. Future research is warranted to investigate the relative preference between long- and short-term threat coping strategies under different circumstances.

Our results may furthermore be interpreted within the theoretical framework of psychological resources proposed by Foa and colleagues (e.g., U. G. Foa, 1971; E. B. Foa & Foa, 1980, 2012). According to this framework, resources may be classified into six categories (love, status, information, money, goods, and services). Individuals perceive these categories as substitutes for one another and therefore may exchange one specific resource for another. In the current research, we show that self-image-threatened individuals may conserve their monetary resources in order to compensate for a decline in their self-worth. In addition, we show that social resources may function as substitutes for financial resources. Specifically, in Study 5, the effect of self-image threat on saving was eliminated among participants who perceived themselves as having many social connections. These findings provide strong support for the resource-exchange theory, and the implications of this theoretical framework for individual behavior are a potentially fruitful topic for future research.

Finally, future research may extend the effect of self-image threat on saving intentions by considering different goals of savings. Researchers have classified saving goals into different categories and motivations (Fisher & Anong, 2012; Katona, 1974; Keynes, 1936; Lee & Hanna, 2015; Lindqvist, 1981; Xiao & Anderson, 1997). The following classification, proposed by Keynes (1936), is commonly used in research: (a) transaction saving—aimed at facilitating daily and basic needs, such as purchasing durable goods, meeting contractual commitments, and paying taxes; (b) precautionary saving—aimed at buffering against unforeseen emergencies, or providing for one's old age and retirement; and (c) speculative saving—aimed at expanding one's wealth or investing in one's own business and enjoying life. Given that self-image-threatened individuals experience heightened negative expectations about their future, it is thus reasonable to predict that they will be more likely to save for precautionary reasons, to prepare for unforeseen negative future events.

Indeed, in one additional study that is reported in the online supplemental materials, we found an initial indication of this pattern among self-image-threatened individuals compared with nonthreatened individuals. Specifically, based on additional data collection ($n = 118$, $M_{age} = 33$; 53% women), self-image-threatened MTurk participants intended to allocate a larger ratio of their savings to precautionary saving ($M = 28.89\%$, $SD = 25.11\%$) than did nonthreatened participants ($M = 21.07\%$, $SD = 18.74\%$, $F[1, 115] = 3.68$, $p = .06$; $\eta^2 = .03$). A threat to self-image (vs. the absence of threat), however, did not yield significant differences in participants' transaction saving ratios ($M = 16.98\%$, $SD = 15.67\%$ vs. $M = 14.93\%$, $SD = 14.08\%$, respectively; $F < 1$, *ns*) or in their speculative saving ratios ($M = 20.55\%$, $SD = 22.67$ vs. $M = 20.37\%$, $SD = 21.03$, respectively; $F < 1$, *ns*). Future research should further investigate the differential effect of threat to self-image on saving types.

Limitations

Several limitations of this research should be noted. In several of our studies (Studies 1B, 3, 5, and 7), we relied on hypothetical and self-report measures when measuring intentions to save, while in other studies (Studies 2 and 6) we used more realistic measures of saving intentions by asking participants to state how much of their income (in United States dollars) they wished to save per year. In Study 4, we further asked participants to indicate the portion of their monthly salary they would ideally allocate to saving. Putting the results of these studies together with those of Study 1A, which relied on actual saving data, we believe that, overall, the effect we observed of self-image threat on saving behavior is likely to represent individuals' real-life behaviors. While consistency between saving intention and behavior has not been studied in detail (Rabinovich & Webley, 2007), based on a meta-analysis of 87 behaviors, Sheppard, Hartwick, and Warshaw (1988) find a frequency-weighted average correlation between intentions and behavior of .53, with wide variations across measures of intentions and types of behavior. Moreover, according to Morrison (1979) purchase intentions are more likely to predict actual behavior in case of high versus low involvement decisions. Following this reasoning, saving intentions, which are associated with relatively high involvement decisions, are likely to correlate positively and strongly with actual saving.

Abramson, Seligman, and Teasdale (1978) suggest that attributions of an individual's helplessness may be stable or unstable, global or specific, and internal or external. Based on the attribution chosen, individuals' negative future expectations may be either chronic and broad or acute and narrow. In the current research, we did not probe deeper into the nature of the negative future expectations induced by self-image threat, that is, whether these negative expectations are related to difficulties of a more temporary nature (e.g., "I have a cold, which makes me stupid and therefore I do not expect to get the job," "I expect to sometimes lose in a game against a specific person") or a more permanent or stable nature (e.g., "I am stupid and therefore I expect to never find a job," "I expect to always lose in everything I do"). Our speculation is that, given that these negative expectations are induced by a threat to self-image mainly due to internal reasons, they are likely to be related to more global, pervasive long-term oriented events. Future research is needed to validate this speculation.

Another limitation consists of focusing on saving intentions as our coping strategy without considering other coping strategies. Retail therapy and compensatory consumption, discussed above, are two such alternative coping strategies. As noted, these strategies serve as immediate rather than future-oriented means of coping with low self-perceptions. Political conservatism is another strategy that researchers have identified as a means of coping with self-image threat and reducing fear, anxiety, and uncertainty (Jost, Glaser, Kruglanski, & Sulloway, 2003). It would be interesting for future research to compare the various coping strategies directly.

Practical Implications

This research has important practical implications for both individuals and policymakers. Individuals commonly encounter self-image-threatening experiences in their everyday lives. Our results might encourage individuals to acknowledge that exposure to these experiences may yield positive outcomes: a tendency to engage in wiser and more virtuous behaviors, such as saving more for the future. For example, policymakers may meet with senior-year college students, before their graduation, and ask them to consider carefully all possible scenarios in terms of expected future jobs and expected future income after completing their studies. By doing so, these individuals may be become more aware not only of their abilities but also of possible failures in finding a promising job after graduation. As a result of such a meeting, these seniors might make cautious financial decisions, rather than unwisely spending their money due to optimistic and sometimes unrealistic expectations of securing attractive employment after graduation.

Retail therapy and compensatory consumption may serve as remedies for self-threat when individuals are pursuing highly visible and immediate means of feeling better about themselves. However, when individuals focus on low visible and long-term means to leverage their self-perceptions, saving become a more suitable approach to remedy self-image threat. Thus, policymakers and organizations may focus on educating the public not to focus on who you are right now when they are experiencing a self-threat, but on who you will be in the future and to help the public understand that saving for the long run may help them think better about themselves.

Finally, given that our observed effect of self-threat on saving is driven by negative expectations about the future, and economic recession is found to lead to deep depression, decreased optimism, and negative expectations about the future (e.g., Cagney, Browning, Iveniuk, & English, 2014), individuals are likely to save more during an economic recession due to their heightened negative future expectations. This is consistent with findings in the economics literature that household savings increase during recession (e.g., Mody, Ohnsorge, & Sandri, 2012). Ironically, this increased saving during recession may in fact cause "the paradox of thrift" and deepen the recession (Keynes, 1936). Thus, in hard times, to fight the recession, policymakers should probably encourage the public to attribute the problem externally, stimulating them to save less and spend more.

References

Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87,* 49–74. http://dx.doi.org/10.1037/0021-843X.87.1.49

Anderson, C., John, O. P., & Keltner, D. (2012). The personal sense of power. *Journal of Personality, 80,* 313–344. http://dx.doi.org/10.1111/j.1467-6494.2011.00734.x

Aronson, J., Blanton, H., & Cooper, J. (1995). From dissonance to disidentification: Selectivity in the self-affirmation process. *Journal of Personality and Social Psychology, 68,* 986–996. http://dx.doi.org/10.1037/0022-3514.68.6.986

Barghini, T., & Pasquali, V. (2015, November 24). Household saving rate 2015. *Global Finance*. Retrieved from https://www.gfmag.com/global-data/economic-data/916lqg-household-saving-rates?page=1

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1993). When ego threats lead to self-regulation failure: Negative consequences of high self-esteem. *Journal of Personality and Social Psychology, 64,* 141–156. http://dx.doi.org/10.1037/0022-3514.64.1.141

Board of Governors of the United States Federal Reserve System. (2015). *Report on the economic well-being of U.S. households in 2014*. Washington, DC: Federal Reserve Board.

Bobbio, A., Canova, L., & Manganelli, A. M. (2010). Conservative ideology, economic conservatism, and causal attributions for poverty and wealth. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 29,* 222–234. http://dx.doi.org/10.1007/s12144-010-9086-6

Brown, J. D., & Dutton, K. A. (1995). The thrill of victory, the complexity of defeat: Self-esteem and people's emotional reactions to success and failure. *Journal of Personality and Social Psychology, 68,* 712–722. http://dx.doi.org/10.1037/0022-3514.68.4.712

Bryan, C. J., & Hershfield, H. E. (2012). You owe it to yourself: Boosting retirement saving with a responsibility-based appeal. *Journal of Experimental Psychology: General, 141,* 429–432. http://dx.doi.org/10.1037/a0026173

Cagney, K. A., Browning, C. R., Iveniuk, J., & English, N. (2014). The onset of depression during the great recession: Foreclosure and older adult mental health. *American Journal of Public Health, 104,* 498–505. http://dx.doi.org/10.2105/AJPH.2013.301566

Cai, F., Yang, Z., Wyer, R. S., Jr., & Xu, A. J. (2017). The interactive effects of bitter flavor and mood on the decision to spend or save money. *Journal of Experimental Social Psychology, 70,* 48–58. http://dx.doi.org/10.1016/j.jesp.2016.12.010

Callan, M. J., Kay, A. C., & Dawtry, R. J. (2014). Making sense of misfortune: Deservingness, self-esteem, and patterns of self-defeat. *Journal of Personality and Social Psychology, 107,* 142–162. http://dx.doi.org/10.1037/a0036640

Campbell, W. K., & Sedikides, C. (1999). Self-threat magnifies the self-serving bias: A meta-analytic integration. *Review of General Psychology, 3,* 23–43. http://dx.doi.org/10.1037/1089-2680.3.1.23

Canova, L., Rattazzi, A. M. M., & Webley, P. (2005). The hierarchical structure of saving motives. *Journal of Economic Psychology, 26,* 21–34. http://dx.doi.org/10.1016/j.joep.2003.08.007

Carver, C. S., & Ganellen, R. J. (1983). Depression and components of self-punitiveness: High standards, self-criticism, and overgeneralization. *Journal of Abnormal Psychology, 92,* 330–337. http://dx.doi.org/10.1037/0021-843X.92.3.330

Carver, C. S., Ganellen, R. J., & Behar-Mitrani, V. (1985). Depression and cognitive style: Comparisons between measures. *Journal of Personality and Social Psychology, 49,* 722–728. http://dx.doi.org/10.1037/0022-3514.49.3.722

Cheng, P. L. (1953). A note on the progressive consumption tax. *The Journal of Finance, 8,* 333–342. http://dx.doi.org/10.1111/j.1540-6261.1953.tb01173.x

Christopher, A. N., & Schlenker, B. R. (2000). The impact of perceived material wealth and perceiver personality on first impressions. *Journal of Economic Psychology, 21,* 1–19. http://dx.doi.org/10.1016/S0167-4870(99)00033-1

Cohen, G. L., Garcia, J., Purdie-Vaughns, V., Apfel, N., & Brzustoski, P. (2009). Recursive processes in self-affirmation: Intervening to close the minority achievement gap. *Science, 324,* 400–403. http://dx.doi.org/10.1126/science.1170769

Crawford Solberg, E., Diener, E., Wirtz, D., Lucas, R. E., & Oishi, S. (2002). Wanting, having, and satisfaction: Examining the role of desire discrepancies in satisfaction with income. *Journal of Personality and Social Psychology, 83,* 725–734. http://dx.doi.org/10.1037/0022-3514.83.3.725

Crocker, J., Niiya, Y., & Mischkowski, D. (2008). Why does writing about important values reduce defensiveness? Self-affirmation and the role of positive other-directed feelings. *Psychological Science, 19,* 740–747. http://dx.doi.org/10.1111/j.1467-9280.2008.02150.x

Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin, 130,* 392–414. http://dx.doi.org/10.1037/0033-2909.130.3.392

Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2008). Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. *Advances in Experimental Social Psychology, 40,* 61–149. http://dx.doi.org/10.1016/S0065-2601(07)00002-0

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227–268. http://dx.doi.org/10.1207/S15327965PLI1104_01

Diener, E., Tay, L., & Oishi, S. (2013). Rising income and the subjective well-being of nations. *Journal of Personality and Social Psychology, 104,* 267–276. http://dx.doi.org/10.1037/a0030487

Disatnik, D., & Steinhart, S. (2015). Need for cognitive closure, risk aversion, uncertainty changes, and their effect on investment decisions. *Journal of Marketing Research, 52,* 349–359. http://dx.doi.org/10.1509/jmr.13.0529

Duclos, R., Wan, E. W., & Jiang, Y. (2013). Show me the honey! Effects of social exclusion on financial risk-taking. *Journal of Consumer Research, 40,* 122–135. http://dx.doi.org/10.1086/668900

Epstein, S. (1992). Coping ability, negative self-evaluation, and overgeneralization: Experiment and theory. *Journal of Personality and Social Psychology, 62,* 826–836. http://dx.doi.org/10.1037/0022-3514.62.5.826

Fan, L., Li, X., & Jiang, Y. (2018). Room for opportunity: Resource scarcity increases attractiveness of range marketing offers. *Journal of Consumer Research*. Advance online publication. http://dx.doi.org/10.1093/jcr/ucy059

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41,* 1149–1160. http://dx.doi.org/10.3758/BRM.41.4.1149

Feagin, J. (1972). Poverty: We still believe that God helps those who help themselves. *Psychology Today, 6,* 101–129.

Feagin, J. (1975). *Subordinating poor persons: Welfare and American beliefs*. Englewood Cliffs, NJ: Prentice Hall.

Fein, S., & Spencer, S. J. (1997). Prejudice as self-image maintenance: Affirming the self through derogating others. *Journal of Personality and Social Psychology, 73,* 31–44. http://dx.doi.org/10.1037/0022-3514.73.1.31

Ferrer, R. A., & Cohen, G. L. (2018). Reconceptualizing self-affirmation with the "trigger and channel" framework: Lessons from the health domain. *Personality and Social Psychology Review*. Advance online publication. http://dx.doi.org/10.1177/1088868318797036

Fisher, P. J., & Anong, S. T. (2012). Relationship of saving motives to saving habits. *Journal of Financial Counseling and Planning, 23,* 63–79.

Foa, E. B., & Foa, U. G. (1980). Resource theory. In K. J. George, M. S. Greenberg, & R. H. Willis (Eds.), *Social exchange* (Vol. 1, pp. 77–94). New York, NY: Springer. http://dx.doi.org/10.1007/978-1-4613-3087-5_4

Foa, E. B., & Foa, U. G. (2012). Resources theory of social exchange. In K. Y. Törnblom & A. Kazemi (Eds.), *Handbook of social resources theory* (Vol. 1, pp. 15–32). New York, NY: Springer. http://dx.doi.org/10.1007/978-1-4614-4175-5_2

Foa, U. G. (1971). Interpersonal and economic resources. *Science, 171,* 345–351. http://dx.doi.org/10.1126/science.171.3969.345

Friend, I., & Lieberman, C. (1975). Short-run asset effects on household saving and consumption: The cross-section evidence. *The American Economic Review, 4,* 624–633.

Furnham, A. (1984). Many sides of the coin: The psychology of money usage. *Personality and Individual Differences, 5,* 501–509. http://dx.doi.org/10.1016/0191-8869(84)90025-4

Furnham, A., & Argyle, M. (1998). *The psychology of money*. London, UK: Routledge.

Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. *Journal of Economic Psychology, 33,* 590–602. http://dx.doi.org/10.1016/j.joep.2011.11.006

Goldberg, H., & Lewis, R. T. (2000). *Money madness: The psychology of saving, spending, loving, and hating money*. Silicon Valley, CA: Wellness Institute.

Greenberg, J., & Pyszczynski, T. (1985). Compensatory self-inflation: A response to the threat to self-regard of public failure. *Journal of Personality and Social Psychology, 49,* 273–280. http://dx.doi.org/10.1037/0022-3514.49.1.273

Griskevicius, V., Ackerman, J. M., Cantú, S. M., Delton, A. W., Robertson, T. E., Simpson, J. A., . . . Tybur, J. M. (2013). When the economy falters, do people spend or save? Responses to resource scarcity depend on childhood environments. *Psychological Science, 24,* 197–205. http://dx.doi.org/10.1177/0956797612451471

Gronmo, S. (1988). Compensatory consumer behavior: Elements of a critical sociology of consumption. In P. Otnes (Ed.), *The sociology of consumption* (pp. 65–85). New York, NY: Humanities Press.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York, NY: Guilford Press.

Heatherton, T. F., Herman, C. P., & Polivy, J. (1991). Effects of physical threat and ego threat on eating behavior. *Journal of Personality and Social Psychology, 60,* 138–143. http://dx.doi.org/10.1037/0022-3514.60.1.138

Inesi, M. E., Botti, S., Dubois, D., Rucker, D. D., & Galinsky, A. D. (2011). Power and choice. *Psychological Science, 22,* 1042–1048. http://dx.doi.org/10.1177/0956797611413936

Johannesen-Schmidt, M. C., & Eagly, A. H. (2002). Diminishing returns: The effects of income on the content of stereotypes of wage earners. *Personality and Social Psychology Bulletin, 28,* 1538–1545. http://dx.doi.org/10.1177/014616702237581

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129,* 339–375. http://dx.doi.org/10.1037/0033-2909.129.3.339

Juster, F. T., & Wachtel, P. (1972). A note on inflation and the saving rate. *Brookings Papers on Economic Activity, 1972,* 765–778. http://dx.doi.org/10.2307/2534131

Katona, G. (1974). Psychology and consumer economics. *Journal of Consumer Research, 1,* 1–8. http://dx.doi.org/10.1086/208575

Kay, A. C., Gaucher, D., McGregor, I., & Nash, K. (2010). Religious belief as compensatory control. *Personality and Social Psychology Review, 14,* 37–48. http://dx.doi.org/10.1177/1088868309353750

Kernis, M. H., Brockner, J., & Frankel, B. S. (1989). Self-esteem and reactions to failure: The mediating role of overgeneralization. *Journal of Personality and Social Psychology, 57,* 707–714. http://dx.doi.org/10.1037/0022-3514.57.4.707

Keynes, J. M. (1936). *The general theory of interest, employment and money*. New York, NY: Cambridge University Press.

Kornadt, A. E., Voss, P., & Rothermund, K. (2015). Hope for the best, prepare for the worst? Future self-views and preparation for age-related changes. *Psychology and Aging, 30,* 967–976. http://dx.doi.org/10.1037/pag0000048

Lakonishok, J., & Maberly, E. (1990). The weekend effect: Trading patterns of individual and institutional investors. *The Journal of Finance, 45,* 231–243. http://dx.doi.org/10.1111/j.1540-6261.1990.tb05089.x

Landis, B., & Gladstone, J. J. (2017). Personality, income, and compensatory consumption: Low-income extraverts spend more on status. *Psychological Science, 28,* 1518–1520. http://dx.doi.org/10.1177/0956797617714811

Lea, S. E. G., & Webley, P. (2006). Money as tool, money as drug: The biological psychology of a strong incentive. *Behavioral and Brain Sciences, 29,* 161–176. http://dx.doi.org/10.1017/S0140525X06009046

Lee, J. M., & Hanna, S. D. (2015). Savings goals and saving behavior from a perspective of Maslow's hierarchy of needs. *Journal of Financial Counseling and Planning, 26,* 129–147. http://dx.doi.org/10.1891/1052-3073.26.2.129

Lewis, A., Webley, P., & Furnham, A. (1995). *The new economic mind*. London, UK: Pearson.

Lindqvist, A. (1981). A note on determinants of household saving behavior. *Journal of Economic Psychology, 1,* 39–57. http://dx.doi.org/10.1016/0167-4870(81)90004-0

Lunt, P. K., & Livingstone, S. M. (1991). Psychological, social and economic determinants of saving: Comparing recurrent and total savings. *Journal of Economic Psychology, 12,* 621–641. http://dx.doi.org/10.1016/0167-4870(91)90003-C

MacLeod, A. K., Williams, J. M., & Bekerian, D. A. (1991). Worry is reasonable: The role of explanations in pessimism about future personal events. *Journal of Abnormal Psychology, 100,* 478–486. http://dx.doi.org/10.1037/0021-843X.100.4.478

McClelland, G. H., Lynch, J. G., Jr., Irwin, J. R., Spiller, S. A., & Fitzsimons, G. J. (2015). Median splits, Type II errors, and false–positive consumer psychology: Don't fight the power. *Journal of Consumer Psychology, 25,* 679–689. http://dx.doi.org/10.1016/j.jcps.2015.05.006

Millimet, C. R., & Gardner, D. F. (1972). Induction of threat to self-esteem and the arousal and resolution of affect. *Journal of Experimental Social Psychology, 8,* 467–481. http://dx.doi.org/10.1016/0022-1031(72)90072-8

Modigliani, F. (1986). Life cycle, individual thrift, and the wealth of nations. *The American Economic Review, 76,* 297–313.

Mody, A., Ohnsorge, F., & Sandri, D. (2012). Precautionary savings in the great recession. *IMF Economic Review, 60,* 114–138. http://dx.doi.org/10.1057/imfer.2012.5

Morrison, D. G. (1979). Purchase intentions and purchase behavior. *Journal of Marketing, 43,* 65–74. http://dx.doi.org/10.1177/002224297904300207

Munichor, N., & Steinhart, Y. (2016). Saying no to the glow: When consumers avoid arrogant brands. *Journal of Consumer Psychology, 26,* 179–192. http://dx.doi.org/10.1016/j.jcps.2015.05.004

Nyhus, E. K., & Pons, P. (2005). The effects of personality on earnings. *Journal of Economic Psychology, 26,* 363–384. http://dx.doi.org/10.1016/j.joep.2004.07.001

Oppewal, H., Paas, L. J., Crouch, G. I., & Huybers, T. (2010). Segmenting consumers based on how they spend a tax rebate: An analysis of the Australian stimulus payment. *Journal of Economic Psychology, 31,* 510–519. http://dx.doi.org/10.1016/j.joep.2010.03.013

Paas, L. J., Bijmolt, T. H. A., & Vermunt, J. K. (2007). Acquisition patterns of financial products: A longitudinal investigation. *Journal of Economic Psychology, 28,* 229–241. http://dx.doi.org/10.1016/j.joep.2006.06.006

Park, L. E., & Maner, J. K. (2009). Does self-threat promote social connection? The role of self-esteem and contingencies of self-worth. *Journal of Personality and Social Psychology, 96,* 203–217. http://dx.doi.org/10.1037/a0013933

Rabinovich, A., & Webley, P. (2007). Filling the gap between planning and doing: Psychological factors involved in the successful implementation of saving intention. *Journal of Economic Psychology, 28,* 444–461. http://dx.doi.org/10.1016/j.joep.2006.09.002

Reimann, M., Nenkov, G. Y., MacInnis, D., & Morrin, M. (2014). The role of hope in financial risk seeking. *Journal of Experimental Psychology: Applied, 20,* 349–364. http://dx.doi.org/10.1037/xap0000027

Rick, S. I., Pereira, B., & Burson, K. A. (2014). The benefits of retail therapy: Making purchase decisions reduces residual sadness. *Journal of Consumer Psychology, 24,* 373–380. http://dx.doi.org/10.1016/j.jcps.2013.12.004

Ritter, R. J. (1988). The buying and selling behavior of individual investors at the turn of the year. *The Journal of Finance, 43,* 701–717. http://dx.doi.org/10.1111/j.1540-6261.1988.tb04601.x

Roux, C., Goldsmith, K., & Bonezzi, A. (2015). On the psychology of scarcity: When reminders of resource scarcity promote selfish (and

generous) behavior. *Journal of Consumer Research, 42,* 615–631. http://dx.doi.org/10.1093/jcr/ucv048

Rubinstein, C. R. (1981). Survey report on money. *Psychology Today, 15,* 29–44.

Schachter, S. (1959). *The psychology of affiliation: Experimental studies of the sources of gregariousness*. Palo Alto, CA: Stanford University Press.

Schmeichel, B. J., & Martens, A. (2005). Self-affirmation and mortality salience: Affirming values reduces worldview defense and death-thought accessibility. *Personality and Social Psychology Bulletin, 31,* 658–667. http://dx.doi.org/10.1177/0146167204271567

Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science, 338,* 682–685. http://dx.doi.org/10.1126/science.1222426

Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research, 15,* 325–343. http://dx.doi.org/10.1086/209170

Sherman, D. K., & Cohen, G. L. (2006). The psychology of self-defense: Self-affirmation theory. *Advances in Experimental Social Psychology, 38,* 183–242. http://dx.doi.org/10.1016/S0065-2601(06)38004-5

Shoham, M., Moldovan, S., & Steinhart, Y. (2017). Positively useless: Irrelevant negative information enhances positive impressions. *Journal of Consumer Psychology, 27,* 147–159. http://dx.doi.org/10.1016/j.jcps.2016.08.001

Shrauger, J. S., & Lund, A. K. (1975). Self-evaluation and reactions to evaluations from others. *Journal of Personality, 43,* 94–108. http://dx.doi.org/10.1111/j.1467-6494.1975.tb00574.x

Solomon, Z., Mikulincer, M., & Hobfoll, S. E. (1986). Effects of social support and battle intensity on loneliness and breakdown during combat. *Journal of Personality and Social Psychology, 51,* 1269–1276. http://dx.doi.org/10.1037/0022-3514.51.6.1269

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology, 89,* 845–851. http://dx.doi.org/10.1037/0022-3514.89.6.845

Spiller, S. A., Fitzsimons, G. J., Lynch, J. G., Jr., & McClelland, G. H. (2013). Spotlights, floodlights, and the magic number zero: Simple effects tests in moderated regression. *Journal of Marketing Research, 50,* 277–288. http://dx.doi.org/10.1509/jmr.12.0420

Starr-McCluer, M. (2002). Stock market wealth and consumer spending. *Economic Inquiry, 40,* 69–79. http://dx.doi.org/10.1093/ei/40.1.69

Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. *Advances in Experimental Social Psychology, 21,* 261–302. http://dx.doi.org/10.1016/S0065-2601(08)60229-4

Steele, C. M., & Liu, T. J. (1983). Dissonance processes as self-affirmation. *Journal of Personality and Social Psychology, 45,* 5–19. http://dx.doi.org/10.1037/0022-3514.45.1.5

Tam, L., & Dholakia, U. (2014). Saving in cycles. *Psychological Science, 25,* 531–537. http://dx.doi.org/10.1177/0956797613512129

Tang, T. L. (1995). The development of a short money ethic scale: Attitudes toward money and pay satisfaction revisited. *Personality and Individual Differences, 19,* 809–816. http://dx.doi.org/10.1016/S0191-8869(95)00133-6

United States Bureau of Economic Analysis. (2018). *United States personal savings rate*. Retrieved from http://www.tradingeconomics.com/united-states/personal-savings

vanDellen, M. R., Campbell, W. K., Hoyle, R. H., & Bradfield, E. K. (2011). Compensating, resisting, and breaking: A meta-analytic examination of reactions to self-esteem threat. *Personality and Social Psychology Review, 15,* 51–74. http://dx.doi.org/10.1177/1088868310372950

van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics, 101,* 449–472. http://dx.doi.org/10.1016/j.jfineco.2011.03.006

Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The psychological consequences of money. *Science, 314,* 1154–1156. http://dx.doi.org/10.1126/science.1132491

Vohs, K. D., Mead, N. L., & Goode, M. R. (2008). Merely activating the concept of money changes personal and interpersonal behavior. *Current Directions in Psychological Science, 17,* 208–212. http://dx.doi.org/10.1111/j.1467-8721.2008.00576.x

Wärneryd, K. E. (1999). *The psychology of saving: A study on economic psychology*. Cheltenham, UK: Edward Elgar.

Weaver, J. R., Vandello, J. A., & Bosson, J. K. (2013). Intrepid, imprudent, or impetuous? The effects of gender threats on men's financial decisions. *Psychology of Men & Masculinity, 14,* 184–191. http://dx.doi.org/10.1037/a0027087

Webley, P., & Nyhus, E. K. (2006). Parents' influence on children's future orientation and saving. *Journal of Economic Psychology, 27,* 140–164. http://dx.doi.org/10.1016/j.joep.2005.06.016

Woodruffe, H. R. (1997). Compensatory consumption: Why women go shopping when they're fed up and other stories. *Marketing Intelligence & Planning, 15,* 325–334. http://dx.doi.org/10.1108/02634509710193172

Xiao, J. J., & Anderson, J. G. (1997). Hierarchical financial needs reflected by household financial asset shares. *Journal of Family and Economic Issues, 18,* 333–355. http://dx.doi.org/10.1023/A:1024991304216

Yamauchi, K. T., & Templer, D. J. (1982). The development of a money attitude scale. *Journal of Personality Assessment, 46,* 522–528. http://dx.doi.org/10.1207/s15327752jpa4605_14

Zhang, L. (2009). An exchange theory of money and self-esteem in decision making. *Review of General Psychology, 13,* 66–76. http://dx.doi.org/10.1037/a0014225

Zhang, L., & Baumeister, R. F. (2006). Your money or your self-esteem: Threatened egotism promotes costly entrapment in losing endeavors. *Personality and Social Psychology Bulletin, 32,* 881–893. http://dx.doi.org/10.1177/0146167206287120

Zhou, X., Vohs, K. D., & Baumeister, R. F. (2009). The symbolic power of money: Reminders of money alter social distress and physical pain. *Psychological Science, 20,* 700–706. http://dx.doi.org/10.1111/j.1467-9280.2009.02353.x

Received June 30, 2017
Revision received February 15, 2019
Accepted February 15, 2019 ■