

NORTHWESTERN UNIVERSITY

Self-Sabotaging in Consumer Goal Pursuit

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

for the degree

DOCTOR OF PHILOSOPHY

Field of Marketing

By Jessica Gamlin

EVANSTON, ILLINOIS

June 2019

© Copyright by Jessica Gamlin 2019

All Rights Reserved

ABSTRACT

Self-Sabotaging in Consumer Goal Pursuit

Jessica Gamlin

People pursuing important goals are known to prefer means that are highly instrumental (those most likely to facilitate goal pursuit). The self-handicapping literature demonstrated an important caveat to this principle—that people instead prefer impediments (rather than instrumental means) to their most important, identity-central goals when they anticipate goal failure. Such self-handicapping is driven by ego-protection motives—specifically, the need to attribute blame for failure to impediments, rather than to the self. In Chapter 1, six studies demonstrate another overlooked caveat to preferences for the most instrumental means. Specifically, we show evidence of “self-sabotaging”—i.e., people reduce preferences for highly instrumental means, in favor of less instrumental ones, when they anticipate success on identity-central goals. We show that self-sabotaging is distinct from self-handicapping, in that it is driven by ego-enhancement motives—specifically, the need to attribute credit for success to the self, rather than to instrumental means.

Chapter 2 further examines self-sabotaging in consumer choices. We show that in identity-central domains, consumers prefer less effective products, because using less effective products allows them to enhance their ego by attributing success to themselves, rather than to the effective products they used. Such preferences arise when consumers experience a high chronic (Study 7) or situational (Studies 8-9) need for internal-credit. Fulfilling the need for such ego-enhancing attributions prior to choice attenuates preferences for less, in favor of more, effective

products (Study 10). Thus, we find consumers strategically enhance their ego through the use of less effective products in domains central to identity.

ACKNOWLEDGEMENTS

I cannot overstate the remarkable influence scholars at Northwestern, and beyond, have had in building my foundation for a home in academia. It is impossible to acknowledge and thank them all fully. I will do my best, knowing this passage will fall short.

I am grateful to my committee members, Neal Roese, Alice Tybout, and Eli Finkel. Thank you for not only encouraging and championing this research, but also for challenging and critiquing my theorizing to make it stronger. You taught me to write more clearly, to think more abstractly, and to cultivate a passion for research along the way.

I am particularly appreciative of my dissertation chair, Aparna Labroo. Thank you for pushing me to excel in ways I did not know I was capable of. Thank you for being my biggest cheerleader and a tireless advocate for this research, even when I doubted. I could not have accomplished this work without you.

To my research collaborators, supporters, and mentors at Northwestern: Rima Touré-Tillery, Ping Dong, and Kent Grayson. I am deeply grateful for the many lessons you imparted, the positive energy you shared, and the support you provided.

Last, but not least, to my cohort: Chris Cannon, Chelsea Galoni, and Brendan Strejcek. I've learned so much through our discussions, debates, and debauchery. You are my rock (stars).

DEDICATION

I could not have completed this dissertation without the instrumental love and support of my family. To my brother, Alex, whose commitment to his goals is a continual source of inspiration. You always brighten my day. To my dad, Steve (the original Gam), whose YOYO philosophy has encouraged me through life's ups and downs. Thank you for being my fiercest defender and advocate. To my mom, Christine, who has more degrees than a thermometer. You are my number one role model, and I am so lucky to have you to look up to. To my loving husband, Kelly, who never lets me get in my own way: Us is my best Chapter.

TABLE OF CONTENTS

ABSTRACT	3
ACKNOWLEDGEMENTS.....	5
DEDICATION.....	6
TABLE OF CONTENTS	7
LIST OF FIGURES	9
CHAPTER 1. SELF-SABOTAGING: PREFERENCE FOR LESS INSTRUMENTAL MEANS DURING GOAL PURSUIT	10
Theoretical Background	10
Study 1	28
Study 2.....	32
Study 3.....	39
Study 4.....	45
Study 5.....	52
Study 6.....	56
General Discussion.....	64
CHAPTER 2. ENHANCING THE EGO THROUGH CHOICE OF LESS EFFECTIVE PRODUCTS	73
Theoretical Background	73
Study 7.....	76

	8
Study 8.....	81
Study 9.....	87
Study 10.....	92
General Discussion.....	99
REFERENCES.....	104
APPENDICES.....	115
VITA.....	131

LIST OF FIGURES

Figure 1. The Spectrum of Instrumentality for Different Means to Math Performance Goals. Classifying Self-Handicapping and Self-Sabotaging Choices Based on Prior Literature and Current Theorizing.....	14
Figure 2. Identity, Goals, and Instrumental Means: Prior versus Current Conceptualization.....	17
Figure 3. Instrumentality and Internal-Credit Evaluations of Savings Account (Financial Domain) and Paper-Pencil (Intellectual Domain) as a Function of Heightening Instrumentality.	35
Figure 4. Preference for More (vs. Less) Instrumental Means as a Function of Goal Activation and Identity-Centrality of the Goal.....	43
Figure 5. Preference for More (vs. Less) Instrumental Means as Function of Situationally-primed and Chronic Identity-centrality of Math Performance Goals.....	50
Figure 6. Preference for More (vs. Less) Instrumental Means as Function of Anticipated Goal Success and Internal-Credit Need.....	55
Figure 7. Choice of Impediment as Function of Anticipated Goal Success Versus Failure and External-Blame Need.....	60
Figure 8. Preference for Instrumental Means as Function of Anticipated Goal Success Versus Failure and Internal-Credit Need.....	63
Figure 9. Preference for a More (vs. Less) Effective Products as a Function Chronic Need for Ego-Enhancing Attributions and of Identity-Centrality.....	79
Figure 10. Identity-Centrality of the Task Domain Heightens Need for Ego-Enhancing Attributions and Reduces Preferences for More Effective Products.....	85
Figure 11. Product Preference (Top Panel) and Ego-Enhancing (Bottom Panel) Based on Product Framing (Less vs. More Effective) and Identity-Centrality.....	90
Figure 12. Product Preference as a Function of Product Framing (Less vs. More Effective), Identity-Centrality, and Ego-Enhancing Attributions from Internal-credit (Top Panel) versus from Choosing the Best (Bottom Panel)	95

CHAPTER 1. SELF-SABOTAGING: PREFERENCE FOR LESS INSTRUMENTAL MEANS DURING GOAL PURSUIT

Joint with Aparna A. Labroo

Theoretical Background

During goal pursuit, instrumental means—i.e., tools that best facilitate goal attainment—come to mind (Ferguson & Bargh, 2004; Shah, Friedman, & Kruglanski, 2002), while impediments and unrelated objects are devalued (Brendl, Markman, & Messner, 2003; Fishbach, Zhang, & Trope, 2010), increasing the preference for and selection of instrumental means when goals are activated (Lewin, 1935; Markman & Brendl, 2000). For example, students with an upcoming math test should prefer using a calculator over just pencil and paper, because it best facilitates performance; and, they should avoid partying the night before an exam, because that impedes performance. Moreover, an instrumental means' value increases in proportion to the importance of the goal it facilitates, while an impediments' value decreases in proportion to the importance of the goal it disrupts (Nisbett & Kanouse, 1969; Ferguson & Bargh, 2004; Rosenberg, 1956). Thus, students to whom math performance is more (vs. less) important (e.g., math vs. English majors) should prefer the calculator (and avoid partying) even more. Extant empirical and theoretical literatures support the notion that preferences for a means is driven by its degree of instrumentality and the importance of the goal that means serves (Kopetz, Kruglanski, Arens, Etkin, & Johnson, 2012; Kruglanski et al., 2002; Peak, 1955). In sum, the more important a goal is to a person, the more they should prefer instrumental means that facilitate the goal and the more they should avoid the impediments that obstruct it.

A person's most important goals often are central to their identity and contribute to ego-maintenance (Markus & Nurius, 1986; Markus & Wurf, 1987; Maslow, 1943). For identity-central goals, the goal itself, as well as aspects surrounding its pursuit, are core components defining who a person is. Identity is served, and ego maintained, not only through goal attainment, but also through the attributions an individual can make about their own role in, and responsibility for, success or failure (Greenwald, 1980; Miller & Ross, 1975; Taylor & Brown, 1988). Namely, attributing success to the self (vs. external factors) enhances the ego, while attributing failure to external factors (vs. the self) protects the ego (Alicke & Sedikides, 2009; Roese & Olson, 2007; Weiner, 1985). For example, while acing a math exam enhances the ego of a math major, foregoing a calculator on that test may afford greater internal attributions of credit for that success (i.e., internal-credit: "I aced it myself without any help"). Such internal attributions of credit further enhance the ego and reinforce identity ("I must really be a math person"). Relatedly, poor performance on a math exam may threaten the identity of a math major, but partying the night before with friends may afford greater external attributions of blame for that failure (i.e., external-blame: "It was my friends' fault, not mine, that I did so poorly"), thereby protecting the ego ("I still can call myself a math person"). Moreover, a math (vs. English) major is more likely to seek internal attributions of credit for math success and external attributions of blame for math failure. Thus, preferences for any means (i.e., instruments or impediments) to a goal may be shaped not only by the degree to which that means facilitates or obstructs the goal, but also by the attributions an individual can make about their own causal responsibility for success or failure if they use that means to pursue the goal. In short,

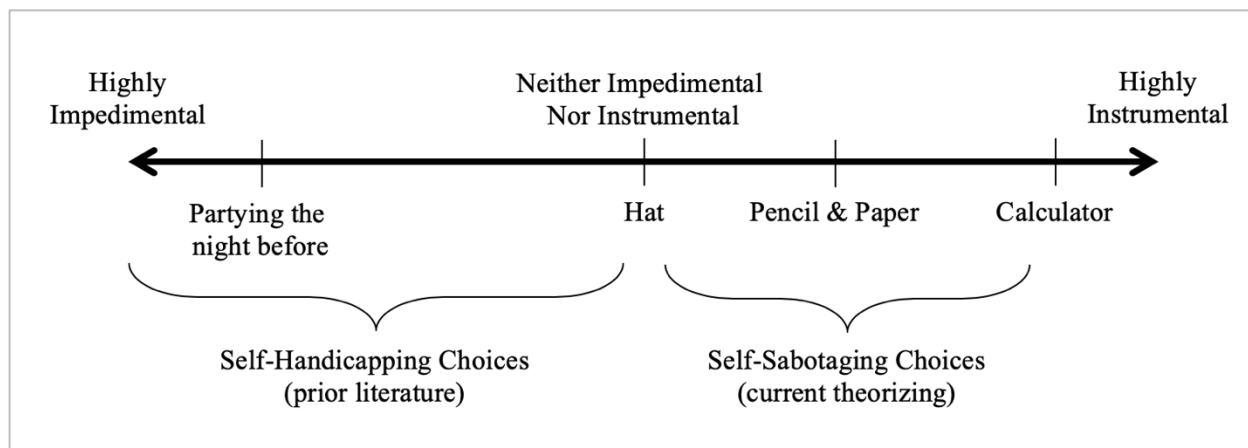
preferences during pursuit of identity-central goals should also be shaped by the internal-credit or external-blame a means affords.

The more central a goal is to a person's identity, the more they will desire internal-credit for success and external-blame for failure. To our knowledge, prior literature has addressed only the later process—i.e., during pursuit of identity-central goals, when failure is anticipated, people need to externalize blame for failure and thus prefer means that obstruct the goal (Higgins & Harris, 1988; Higgins, Snyder & Berglas, 1990; Martin, Marsh, & Debus, 2003). For example, people anticipating failure on an upcoming intelligence test (an identity-central goal) are more likely to take a drug that inhibits (vs. enhances) cognitive performance and to drink more (vs. less) alcohol in advance of the test (Berglas & Jones, 1978; Jones & Berglas, 1978; Tucker, Vuchinich, & Sobell, 1981). This finding is important, because it demonstrates a violation of the normative predictions in the goals literature. Following the activation of an important goal (i.e., intelligence performance goals) people should—but do not always—like, prefer, and choose the most instrumental means available (i.e., the drug that enhances performance). The self-handicapping literature suggests that this normative violation occurs because (a) the goal is central to identity, and (b) failure is anticipated, leading to (c) the choice of an impediment over an instrument. (Importantly, whereas the self-handicapping literature has theorized such choice arises due to the need for external-blame, to our knowledge there are no empirical demonstrations showing this need is the underlying driver of choice.) Moreover, we propose a previously unexamined process—self-sabotaging—that occurs when (a) a goal is central to identity, and (b) success is anticipated, such that (c) the need for internal-credit drives preferences, leading to (d) a preference for less, in favor of more, instrumental means.

Means, Goals and Identity Maintenance

Instrumental means are those that facilitate goal performance and whose use increases the likelihood and expectancy of goal success (Bélanger et al., 2016; Kruglanski et al., 2002). During goal pursuit, the things a person encounters—e.g., objects, tools, and even people, environments, and opinions—can be classified by their degree of instrumentality to the active goal. Those means at the highest levels of instrumentality, by definition, best facilitate a person’s active goal; whereas, those means at the “opposite end of the spectrum” are the impediments that best obstruct a person’s active goal. That which is unrelated to the active goal—i.e., neither facilitates nor obstructs—falls at a neutral mid-point. For example, a student with a goal to ace their upcoming math exam would classify a calculator as highly instrumental, a pencil and paper as less instrumental, partying the night before as highly impedimental, and a hat as neither instrumental nor impedimental (see Figure 1). During goal pursuit, evaluations of target objects are a function of their location on the spectrum of instrumentality—i.e., the degree to which they facilitate or obstruct the active goal—and degree to which the goal is personally important to the pursuer (Rosenberg, 1956). The widespread belief is that people prefer the most instrumental means to pursue their most important goals (Kruglanski et al., 2002; Markman & Brendl, 2000; Bargh & Chartrand, 1999).

Figure 1. The Spectrum of Instrumentality for Different Means to Math Performance Goals. Classifying Self-Handicapping and Self-Sabotaging Choices Based on Prior Literature and Current Theorizing



People are known to value highly instrumental objects over less instrumental objects and goal-irrelevant objects, and to devalue objects that impede their active goals (Ferguson & Bargh, 2004; Lewin, 1935; Van Osselaer et al., 2005; Rosenberg, 1956). For example, smokers deprived of nicotine (vs. satiated smokers) report higher preferences for items that facilitate smoking (e.g., cigarettes, lighters, ashtrays) and lower preferences for items unrelated to smoking (e.g., DVD players; Markman & Brendl, 2005). Hungry (vs. satiated) people report higher preferences for food items and lower preferences for non-food items (Markman, Brendl, & Kim, 2007). In one experiment conducted in a grocery store, people who did not recently eat (vs. those who recently ate a meal), and who were therefore hungrier, bought more groceries (Nisbett & Kanouse, 1969; however, we note that this pattern held only for people of “normal” weight, but that the opposite pattern emerged for overweight shoppers—a point we return to later in our theorizing). Thirsty (vs. satiated) people responded fastest to pairings of positive words with the most thirst-quenching target-word (e.g., juice), compared to pairings of positive words with a less thirst-quenching target-word (e.g., beer), compared to pairings of positive words with thirst-quenching-

related target-word (e.g., bottle), and compared to pairings of positive words with words unrelated to quenching thirst (e.g., tree; Ferguson & Bargh, 2004). More instrumental means are also associated more strongly in memory to the goal (Kruglanski et al., 2002). As a result, each time the goal is activated, these means come readily to mind, increasing the odds people select them during goal pursuit. Positive associations between instrumental means and the goal (Fitzsimons & Shah, 2008; Orehek & Forest, 2016) and the ease with which means come to mind each time the goal is activated further generates positive affect that is attributed to the means (Labroo & Lee, 2006).

Moreover, people are known to devalue impediments to active goals that those impediments would obstruct. For example, people respond more slowly to impediments (i.e., reaction time in a word-non-word classification task) when the impediment is preceded by priming a goal that it would (vs. would not) obstruct (Fishbach, Friedman, & Kruglanski, 2003). In addition to reacting more slowly to impediments, people also evaluate impediments more negatively. In one study, people with a goal to lose weight evaluated impediments (e.g., fattening foods like cake) negatively, and evaluated them more negatively than they did instruments (e.g., diet and exercise), which were positively evaluated (Fishbach, Zhang, & Trope, 2010). Slower reaction to, and more negative evaluations of, impediments (vs. instruments) is adaptive in that it helps people avoid the pitfalls that most threaten goal success. In sum, goal activation reinforces the strength and positivity of association between a goal and the most instrumental means, and reinforces the strength and negativity of the association between a goal and its impediments, which in turn increases selection (vs. rejection) of the most instrumental (vs. impedimental)

means. The more positive valuation of, and preference for, the means highest in instrumentality during goal pursuit is optimal in that it maximizes the likelihood of goal success.

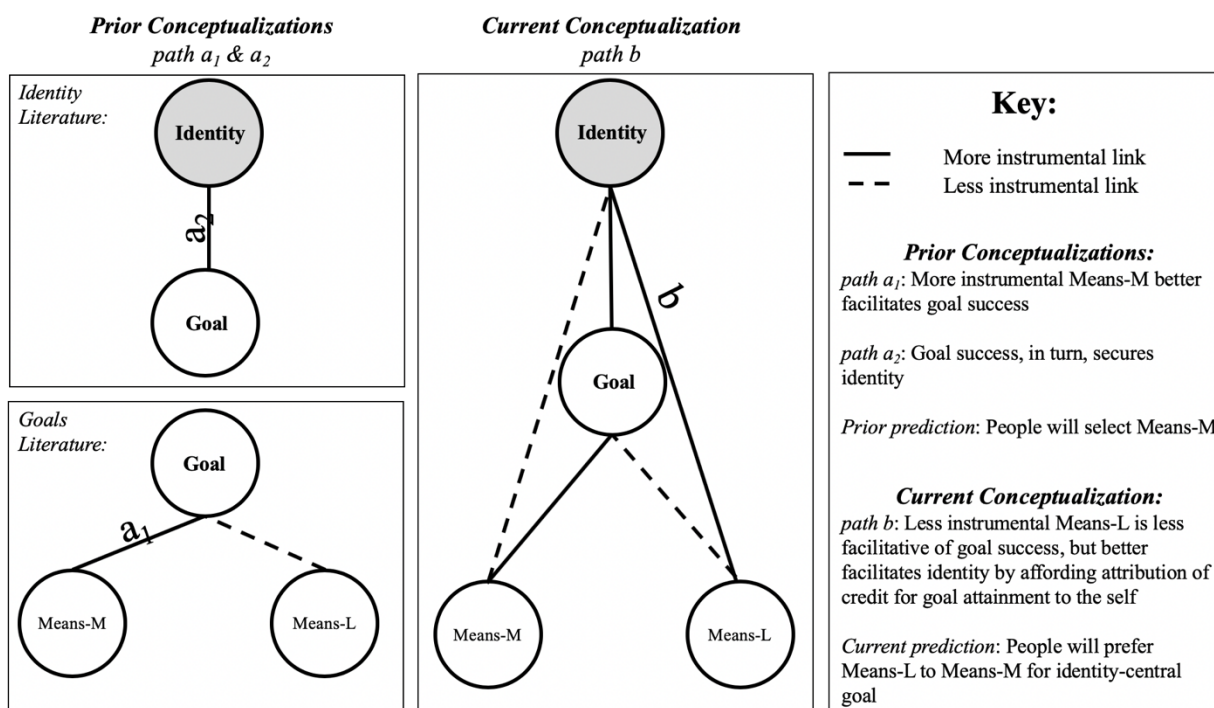
Just as instrumental means serve a person's goals, goals themselves serve an individual's identity and ego. People self-actualize based on goals they prioritize and deem important (Maslow, 1943), the self-concept develops through knowledge of desired and undesired states for the self (Markus, 1983; Markus & Nurius, 1986), and a person's self-knowledge emerges through her "personally significant goals, plans, motives, values, hopes, fears, and threats" (Cantor et al., 1986, pp. 96). Moreover, maintaining a positive self-view is essential for psychological functioning (James, 1890; Maslow, 1943; Taylor & Brown, 1988); therefore, people prioritize the goal-directed activities that best help them secure their identity (Carver & Scheier, 1982; Tesser, 1988). When goals central to a person's identity (i.e., those that define who the person is) are threatened, people boost efforts to attain these goals and choose means most instrumental to reinstating identity (Gao, Wheeler, & Shiv, 2009). Therefore, accomplishing one's identity-central goals is believed to be the route to securing identity, and choosing the most instrumental means, by definition, best facilitates goal attainment. Thus, prior literature would suggest that people prefer more (vs. less) instrumental means for identity-central goals, because attaining these goals in turn secures identity [see Figure 2, path a].

Our Alternative View: Why People May Prefer Less Instrumental Means

Our position is that people prefer less, in favor of more, instrumental means when pursuing their identity-central goals [Figure 2, path b]. An important aspect of identity maintenance is internal-credit—the extent to which a person can attribute bringing about desired outcomes and goal success to themselves (Greenwald, 1980; Hastorf, Schneider, & Polefka,

1970; Taylor & Brown, 1988). Making internal attributions of credit is an important aspect of ego enhancement and a fundamental motive where identity is concerned (Miller & Ross, 1975; Sedikides & Gregg, 2008; Taylor & Brown, 1988).

Figure 2. Identity, Goals, and Instrumental Means: Prior versus Current Conceptualization



Further, in order to attribute an outcome (e.g., goal success) to internal factors (e.g., one's own competence and efforts) a person must not attribute that outcome to factors external to himself (e.g., helpful products, other people's hard work, luck; Gilbert & Malone, 1995; Heider, 1958; Hull, 1943; Kelley, 1967; Passer, Kelley, & Michela, 1978; Rotter, 1966; Weiner, 1985, 2018). Internal and external attributions fall on a bi-polar continuum; therefore, if a means is highly instrumental, then goal attainment would be more attributed to the means, and using such means should "trade-off" and reduce the degree to which goal attainment can be attributed to a person's own internal factors. If more instrumental means afford less internal-credit to the

person, for identity-central goals people may (a) prefer less to more instrumental means, as these afford more internal-credit, and (b) devalue highly instrumental means, as these undermine internal-credit. We call such preferences “self-sabotaging.”

This proposal is novel, but data reported in several past studies can be reinterpreted as supportive of our premise. For example, a study by Shah and colleagues (2002) investigated whether people shield important goals from competing goals. A secondary finding the authors did not focus on showed that people listed more means with which to pursue their most (vs. less) important goals. This finding is consequential to our theorizing in three ways. First, all means cannot be “the most effective,” thus listing more means implies less instrumental means are considered alongside more instrumental means for use in pursuing the most important goals. Second, a fundamental principle of goal-systems theory is that the greater the number of means attached to a single goal, the weaker the degree to which any of those means facilitates the goal (Kruglanski et al., 2002; Zhang, Fishbach, & Kruglanski, 2007). Therefore, each additional unique means deemed useful for a goal lessens the instrumentality of all means in the consideration set. Third, the “means” listed in this particular study were comprised of activities participants would perform themselves, which may be indicative of a greater need to attribute the desired outcome to the self (e.g., as in Figure 2, path b, a means may serve the goal less but the identity more). Finally, the focal goal in this study was a personal “attribute they had a strong...desire to attain,” which corresponds strongly to the conceptualization of an identity-central goal. These insights support our view that during pursuit of identity-central goals people prefer to sacrifice instrumentality in favor of seeing the self as responsible for bringing the desired outcome (i.e., internal-credit).

In the experiment conducted by Nisbett and Kanouse (1969), normal-weight shoppers bought more groceries when hungry (vs. not hungry), whereas the opposite pattern emerged for overweight shoppers (see their Figure 2). Considering overweight shoppers are likely to be those with higher importance of weight-loss goals and to hold this goal as more central to their identity, buying more food when less (vs. more) hungry could be construed as real-world evidence of self-sabotaging—i.e., preferring less (vs. more) instrumental means to identity-central goals. Of course, a caveat to this is that the types of food purchased (e.g., healthy vs. unhealthy) were not reported by the experimenters. Thus, our insight is limited in that we assume the type of food purchased was similar between the normal and overweight shoppers. Nonetheless, it is still important to consider that people for whom the goal to lose weight is more important, and likely to be central to their identity, did not make the most instrumental choices.

Labroo and Kim (2009), in their instrumentality heuristic paper, also report an anomaly that can be supportive of our view. Their main finding is that people infer means associated with effort are more instrumental to goals. For example, participants with a salient (vs. not) goal to “become a kinder person” donate more to charity after expending effort reading a blurry (vs. clear) appeal. From our standpoint, effort might have increased internal-credit afforded rather than perceived instrumentality (e.g., “I’m doing more, so I can credit myself more”). Moreover, participants who read a clear ad donated *less* to the charity when the be-kind goal was salient (vs. not). This result is opposite of past research showing that goal activation (vs. not) increases goal-consistent preference and actions (Kruglanski et al., 2002), but consistent with our theorizing. To the extent becoming a kinder person is an identity-central goal, this result could indicate people

with salient (vs. not) identity-central goals sought internal-credit and avoided the means that did not require effort as those did not afford internal-credit.

Preference for less (vs. more) instrumental means is also observed in the extensive literature on compensatory-consumption effects that shows people address identity-threats by choosing means that facilitate their identity-goals (Gao et al., 2009; Rucker & Galinsky, 2008). An important, unexplained anomaly occurs in the control condition of such findings, where identity-relevant aspects (e.g., intelligence, power) are activated but not threatened. Participants with salient (but non-threatened) identity-goals preferred products *less* instrumental to those goals compared to more instrumental products. Specifically, students who wrote about their academic-identity (a manipulation that we contend may have activated identity-central academic goals; Förster, Liberman, & Friedman, 2007), chose a pen *less* frequently than candy (Gao et al., 2009, Studies 1 and 2); those who wrote about being powerful (which we contend may have activated the identity-central goal to be powerful) preferred status products *less* than non-status products (Rucker & Galinsky, 2008, Study 1). Thus, people with active identity-central goals preferred the *less* to *more* instrumental means (which, according to our view, afford more internal-credit), though this result was not discussed by the authors nor reasons proposed why it might occur. Participants *only* preferred the instrumental to non-instrumental means under threat, which might have called goal attainability into question, turning focus to securing the goal rather than crediting the self. Of course, as with any post-hoc analysis, multiple interpretations are possible, and a plausible alternative explanation may be that writing about being powerful or academic-identity simply satiated the goal, which caused devaluation of more instrumental means. We nonetheless point out that it is important to consider possible explanations for

previous findings in order to more fully understand the psychological processes unguiding goal-directed choice.

Finally, there is also extensive evidence supportive of our hypothesis from the self-handicapping literature. The primary finding in the self-handicapping literature is that that people prefer impediments when they anticipate failure on identity-central goals (Berglas & Jones, 1978; Snyder & Smith, 1982). The self-handicapping literature theorizes, but (to our knowledge) does not demonstrate, that such preferences for impediments arise because of the need to blame external factors for failure. The seminal example in the self-handicapping literature comes from Berglas and Jones (1978), who found participants who anticipated they would not be successful on an upcoming intelligence test preferred to ingest what they believed to be a performance-*inhibiting* drug for a subsequent test 70% (vs. 13%) of the time. The authors theorized, but did not test, that participants chose means that would impede performance because, by self-handicapping, they could externalize potential failure (i.e., blame the drug/means for poor future performance). Thus, the self-handicapping literature provides a first demonstration that people do not always prefer the most instrumental means when important goals are activated (see Figure 1), in violation of the normative predictions of goal systems theory.

Moreover, within the self-handicapping literature itself, there are examples whereby people prefer less, over more, instrumental means, or devalue the most instrumental means available, when *success* is anticipated on identity-central goals—although this finding is framed as further evidence of self-handicapping (i.e., preference for an impediment) and the underlying process is not tested. The self-handicapping literature does not recognize this preference as a unique effect driven by potentially distinct needs (i.e., the need to internalize-credit rather than

externalize-blame). For example, Weidner (1980) set out to replicate the original demonstration of self-handicapping conducted by Berglas & Jones (1978); however, the authors added a condition in which participants anticipated success (vs. failure or control) in an upcoming task, and were made to choose between an instrumental means (i.e., a performance enhancing drug) and an impediment (i.e., a performance inhibiting drug). Compared to the control condition, those anticipating success in the upcoming task devalued the performance enhancing drug, although statistics for this contrast were not reported and the underlying motivations for this preference were not discussed. We contend that this is evidence, albeit unrecognized, of self-sabotaging: participants anticipating success on an identity-central goal devalued the highly instrumental, performance-enhancing drug, because they wanted to credit themselves, rather than the drug, for their future success. This study is not unique in demonstrating, but failing to explain, self-sabotaging choices. Tucker, Vuchinich, and Sobell (1981) showed that students anticipating failure self-handicapped by consuming more alcohol; but also, important to our theorizing, they showed that students anticipating *success* chose to spend *less* time studying an instruction manual for an upcoming test (i.e., they devalued the most instrumental means available to them). We contend this is further evidence of self-sabotaging, and is distinct from self-handicapping in that we theorize the students' choice was driven by a need to attribute success to themselves, rather than by the need to blame the means for failure. The distinction between such underlying needs was neither measured nor proposed by Tucker and colleagues. Finally, Rhodewalt, Saltzman, & Wittmer (1984) also examined reduced preferences for a highly instrumental means—i.e., foregoing meaningful practice—in the context of competitive sports, but also failed to explain their results in terms of internal-credit needs and instead took the

traditional self-handicapping view. This is surprising, because the self-handicapping literature itself clarifies that, “self-handicapping involves an *active choice of impediments* to success” (Martin et al., 2003, p. 5, emphasis ours) and that internalizing credit for success is an *ancillary benefit* of (rather than a core need driving) preferences for impediments (Berglas & Jones, 1978; Higgins et al., 1990).

Finally, even scales measuring self-handicapping strategies do little to highlight the distinction between, and instead include items that further preclude disentangling, these two needs (Smith, Snyder, & Handelsman, 1982). For example, one scale (Strube, 1986) includes two (out of ten total) items related to self-sabotaging rather than self-handicapping—i.e., “I always try to do my best, no matter what” (reverse coded) and “I would do a lot better if I tried harder”—both of which seem to suggest foregoing highly instrumental means. Our final point is that self-handicapping is grounded in literature and itself explicitly distinguishes between the need to internalize success versus the need to externalize failure (Greenwald, 1980; Hastorf, Schneider, & Polefka, 1970), making the omission of this distinction within existing self-handicapping literature even more stark and in need of clarification. Our aim is to address this gap by proposing self-sabotaging as distinct from self-handicapping in both process—i.e., driven by the need to attribute success to internal factors (i.e., internal-credit need)—and outcome—i.e., reduced preferences for more, in favor of less, instrumental means.

External-Blame versus Internal-Credit: Distinct Ego-Maintenance Needs

One fundamental aspect of the attribution literature is that, in order to feel good about one’s self and to gain a sense of competence in a domain, people use attributions to protect and enhance their self-image (Alicke & Sedikides, 2009; Allport, 1937; Weiner, 1972). When

selecting the objects (means) people will use to facilitate their goals, not only is goal success or failure considered, but also the ability to make attributions that will maintain their identity (e.g., help maintain a positive view of their own traits, like intelligence) plays a role. The self-handicapping literature demonstrates that ego-needs elicit impedimental choices. For example, people wanting to demonstrate their intelligence, a highly-identity-central goal, consume more alcohol, prefer an herbal tea that inhibits cognitive performance, and perform meaningless tasks in lieu of meaningful practice prior to an intelligence test (Alter & Forgas, 2007; Martin et al., 2003; Tucker et al., 1981). The self-handicapping literature theorizes that such preferences for impediments arises because people need to protect their ego, and impediments afford the externalization of blame for failure (i.e., attribute failure to the means, rather than the self). In our theorizing, self-sabotaging provides an important, yet previously ignored, counterpart to self-handicapping. Specifically, whereas “self-handicappers chose impediments or obstacles to successful performance that enable them to deflect the cause of failure away from their competence and on to the acquired impediments” (Martin et al., 2003, p. 3), we contend that self-sabotagers prefer *less*, over more, instrumental means, which enables them to internalize credit for their competence rather than attribute it to the means.

The need for internal-credit and external-blame is also addressed, separately, in the identity-literature. Alicke and Sedikides (2009), for example, note that self-protection and self-enhancement motives are essential to healthy psychological functioning and physical well-being. As a result, people engage in present behavior, and reinterpret past events, so as to protect or enhance self-image. Importantly, they note enhancement and protection motives are likely to emerge when aspects are high in personal relevance or pertain to “a characteristic [that] is central

to the individual's identity" (p. 30). We argue that people also take a future-oriented approach to ego-protection and enhancement, which guides choices during pursuit of identity-central goals. We propose that people self-sabotage—i.e., select means that are less, over more, instrumental—because such means afford internal-credit, which in turn enhances the ego. People are also motivated to actually attain their most valued goals because, if they fail at their goals, they cannot internalize-credit (i.e., there is no success to speak of). Thus, we theorize self-sabotaging arises when people anticipate success, but not failure, on their identity-central goals.

A Dual Pathways Model to Securing Identity: The Preference for Less Instrumental Means

If identity is secured through attaining important goals, which are best facilitated by using the most instrumental means available, then people should indeed prefer more (vs. less) instrumental means during pursuit of identity-central goals [Figure 2, path a]. But, if more instrumental means also afford less internal-credit (Gilbert & Malone, 1995; Passer, Kelley, & Michela, 1978), and given the need for internal-credit is fundamental to self-enhancement (Alicke & Sedikides, 2009; Greenwald, 1980), then less (vs. more) instrumental means should be preferred during pursuit of identity-central goals [Figure 2, path b]. Thus, we posit:

H1a: People perceive a trade-off between the instrumentality of means used for a goal and the degree to which they can garner internal-credit for goal success.

H1b: Heightening the instrumentality of a means undermines the internal-credit it is seen to afford.

This trade-off between instrumentality and internal-credit is critical when goals are central to identity, because such goals situationally elicit greater need for ego-maintenance, such as ego-enhancement by attributing credit to the self for success. We propose that people need to

attribute success internally when goals are central to identity, and they may do so by using less instrumental means and foregoing the most instrumental means. Thus, we posit:

H2: The more central to identity a goal, the more preferences will shift away from using more, in favor of less, instrumental means during goal pursuit.

The reason people might choose means that afford internal-credit over instrumental means, even though such choices could undermine goal attainment, is because people might presume goal success. Research shows when people anticipate goal failure (or non-success), they choose impediments, and this is proposed to be due to the need to protect their ego by blaming means for failure (Berglas & Jones, 1978). Our view is when goal success is presumed, people might prefer less, over more, instrumental means, because they need to attribute success to the self, and less instrumental means afford greater internal-credit. In short, the preference for less, in favor of more, instrumental means should be driven by the heightened need for internal-credit on identity-central goals. Thus, we posit:

H3a: Preferences for less, in favor of more, instrumental means during pursuit of identity-central goals will occur when goal success (but not failure) is anticipated.

H3b: Reduced preferences for more, in favor of less, instrumental means during pursuit of identity-central goals will be driven by the need for internal-credit.

Finally, we propose that self-handicapping and self-sabotaging are distinct—the later novel and proposed by us. Self-handicapping occurs when people anticipate failure on identity-central, are motivated to blame external factors for that failure (in order to protect the ego), and thus choose impediments (Martin et al., 2003). We propose self-sabotaging, on the other hand, occurs when people anticipate success on identity-central goals, are motivated to credit internal

factors for that success (in order to enhance the ego), and thus choose less, over more, instrumental means. Thus, we posit:

H4: Self-handicapping and self-sabotaging are driven by distinct ego needs—self-protection via external-blame versus self-enhancement via internal-credit, respectively—and result in different means-preferences during pursuit of identity-central goals.

The Current Research

We conducted six studies to test our hypotheses. In Studies 1 and 2, we use real-world observational data and an experimental manipulation to show that people perceive a trade-off between instrumentality and internal-credit. In Studies 3 and 4, we demonstrate self-sabotaging—that people devalue a more, in favor of less, instrumental means. This occurs only when a goal is active (Study 3); when no goal is activated, identity-centrality does not shape preferences. In addition, self-sabotaging arises whether the identity-centrality of an active goal is primed or measured (Study 4). In Study 5, we demonstrate the mediating role of internal-credit need and the moderating role of anticipating goal success in self-sabotaging. We show that chronic internal-credit need elicits preference for less, in favor of more, instrumental means, but only when goal success is anticipated. Finally, in Study 6, we show both self-sabotaging and self-handicapping within the same study, and demonstrate the underlying role of internal-credit and external-blame need, respectively.

To ensure adequate power, we targeted 50-100 participants per cell for between-subject contrasts. We also conducted manipulation checks in all experimental studies (Studies 2-6), and a pretest was conducted for materials used in Studies 2, 3, and 4. Seeking diversity and

inclusiveness, Study 1 employed real-world observational data of elite entrepreneurs, Studies 4 and 6 student samples, and Studies 2, 3, and 5 samples from the online subject platform Mechanical Turk (MTurk).

Study 1

Success on goals usually can be attributed to both a variety of factors external to the self that are instrumental to success—e.g., one’s team and luck—and to internal factors that facilitate success—e.g., one’s own skill, effort, and competence. Considering that both external and internal factors facilitate goal success, people who are successful likely draw on both. However, our position is that people perceive a trade-off between the extent their success can be attributed to factors external to the self and the extent their success can be attributed to internal factors. Study 1 was an initial demonstration of this trade-off between means instrumentality and internal-credit, using real-world data. Trained coders listened to a popular podcast that interviews successful entrepreneurs. Coders rated the extent to which entrepreneurs attributed their success to instrumental means external to themselves and the extent to which they attributed their success to themselves. We predicted a negative correlation such that the more each entrepreneur indicated their success was a result of instrumental means (e.g., their team, good luck), the less they would indicate their success could be attributed to internal-factors (e.g., their own hard work and competence).

Method

Two trained coders, blind to our hypotheses, listened to every unique episode of the podcast “How I Built This with Guy Raz By NPR” aired between the podcast’s iTunes debut (9/12/2016) and 12/17/2018 ($N_{\text{episodes}} = 96$). The first coder recorded the date the episode first

aired, total episode length ($M = 44.3$ minutes, $SD = 9.12$), the entrepreneurs name, age at the time of the interview ($M = 53.7$, $SD = 14.6$), and gender (33% female), the company they founded, and whether they were still involved with the company or not at the time of the interview (85% still involved).

Central to our inquiry, near the conclusion of about half the episodes ($N = 50$), the host asks each entrepreneur how much of their success is due to instrumental external factors (i.e., their team and luck) and how much of their success is due to internal factors (e.g., their own hard work, intelligence, and skill). The first coder recorded the time at which this question was posed, and both coders independently coded the degree to which the entrepreneur said that two instrumental means (i.e., their team and luck) played a role in their success (1 = *Not at all*, 5 = *Extremely*) and the degree to which the entrepreneurs said their own internal factors played a role in their success (1 = *Not at all*, 5 = *Extremely*). We averaged the two coders ratings for the two instrumental means into a single instrumentality index ($r = .73$, $p < .001$), and we averaged the two coders ratings for the internal factor into a single internal-credit index ($r = .50$, $p < .001$). Both coders also provided a paraphrased transcription of each entrepreneur's open-ended response to the question.

Results and Discussion

Our central thesis was that the more instrumental factors were credited for the success of the business venture, the less the entrepreneur would credit themselves. First, a pretest ($N = 97$ adult MTurk workers, $M_{\text{age}} = 35.01$, $SD = 9.12$; 36.7% female) showed that people generally hold a lay belief that successful entrepreneurs must rely on *both* internal-credit (e.g., hard work, own skill) and instrumental means (e.g., family, friends, luck), and that reliance on these two

factors for driving success is *positively* correlated ($r = .19, p < .05$; see Appendix for full details). However, we theorized people would perceive a trade-off between instrumentality and internal-credit when pursuing their own identity-central goals.

We therefore first assessed the correlation between the instrumentality and internal-credit indices of the entrepreneurs themselves. In support of our theorizing, and contrasting with the pretested lay beliefs, this analysis showed a significant *negative* correlation ($r = -.40, p = .003$). This result indicates that people succeeding at a highly identity-central goal (i.e., entrepreneurs who built successful businesses) said that the more their own internal factors were responsible for their success, the less instrumental factors were responsible, and vice-versa. This negative correlation is indicative of the notion that, in identity-central goals, successful people experience a trade-off between the degree to which their success was due to instrumental means and the internal-credit they garnered for their success.

To further test whether this effect held given other relevant personal and professional aspects, we ran a regression predicting internal-credit from means-instrumentality, controlling for the gender of the entrepreneur, their age at the time of the interview, and whether they were involved with the company at the time of the interview (yes = 1; no = -1). As expected, the results of this regression showed that the instrumentality of means has a significant negative effect on internal-credit ($b = -0.65, SE = .21, t(41) = -3.00, p = .005$), such that the more they credited instrumental means, the less internal-credit was afforded to the entrepreneur for success. There was no effect of age, gender, or entrepreneur involvement ($ps > .20$).

These results were obtained by coding real-world data—i.e., interviews with some of the most prominent and successful entrepreneurs in the world. The entrepreneurs spanned a wide age

range ($\text{Min}_{\text{age}} = 27$, $\text{Max}_{\text{age}} = 89$) and included both male and female entrepreneurs. The entrepreneurs also hailed from a variety of industries, including food and beverage (e.g., Starbucks, Ben & Jerry's), internet services (e.g., Wikipedia, AOL, Reddit), consumer packaged goods (e.g., Spanx, Tom's of Maine, Glossier), among others. This diversity lends support to the generalizability of the trade-off observed between instrumentality and internal-credit. Moreover, since these are some of the most successful entrepreneurs, who should have relatively low chronic need for ego-enhancement (compared to the average person), the fact that this trade-off emerges supports the likely generalizability of the effect.

There are also limitations to this finding. First, while the entrepreneurs themselves were diverse, they comprise a unique population with motives and needs that may be distinct from the general population. Second, it is possible that something about the way the interviewer posed the question itself could have prompted or biased the entrepreneurs to portray a trade-off. It should be noted, however, that entrepreneurs are predisposed to think of their work as requiring a "both-and" mindset (e.g., they need both time and money to launch their venture, they need both thoughtful analysis and creative energy), which somewhat allays this concern. Finally, as with any correlational design there is a limitation in interpreting causality. Nonetheless, as a first exploration of the trade-off between instrumentality and internal-credit, this study provides an elegant real-world context to examine this effect.

To address the limitations of Study 1, Study 2 takes an experimental approach to assessing the trade-off between instrumentality of a means and the internal-credit it affords. Study 2 experimentally manipulates (i.e., heightens) the instrumentality of a means to a goal and measures the degree to which it is then seen to afford internal-credit for success. Study 2 also

examines this trade-off across two domains (financial, academic) using different means that are either initially high (a savings account) or low (a pencil & paper) in instrumentality for the goal.

Study 2

In Study 2, we tested our hypothesis that consumers perceive a trade-off between instrumentality of a means and the internal-credit it affords, and that heightening the instrumentality of a means would undermine the internal-credit it is seen to afford. For robustness, we selected two domains—financial and intellectual—to test our proposition. This choice allowed us to test: (a) two different types of goals—long-term (financial) versus proximal (intellectual)—and (b) two different types of means—products usually considered highly instrumental (savings account) and products usually considered to afford substantial internal-credit (paper-pencil). Half the participants evaluated the two means sequentially—savings account then paper-pencil—for their instrumentality in achieving financial and intellectual goals, respectively, and for the internal attributions of credit afforded to consumers when using such products to attain their goals. The remaining half of participants also evaluated these two means sequentially for their instrumentality and the internal-credit they afford, but we first heightened perceived instrumentality of each product by asking participants to list two reasons why the product is instrumental for the goal it serves. We expected this instrumentality-heightening manipulation to increase perceived instrumentality of each of the products by allowing participants to elaborate on instrumentality these means offer, regardless of whether the product is initially high on instrumentality (savings account) or high on internal-credit (paper-pencil), a finding that is like a manipulation check for us. Crucial to our proposition, we expected that

experimentally heightening perceived instrumentality would *reduce* the internal-credit each product is seen to afford.

Method

Two hundred fourteen adults from MTurk (48.1% female; $M_{\text{age}} = 35.7$, $SD_{\text{age}} = 11.0$) completed a 2 (product instrumentality: heightened vs. control) \times 2 (evaluation: instrumentality vs. internal-credit) mixed-design study, with the first factor manipulated between-subject and the second factor measured within-subject. We also included two (within-subject) goal-domains (financial and intellectual) as replicates.

To set the financial-domain context within which to evaluate the instrumentality of versus internal-credit afforded by a savings account, we first instructed all participants to consider the importance of their long-term financial goals and the role a savings account might play with respect to such goals. Half the participants assigned to the heightened-instrumentality condition were additionally asked to list two ways a savings account is instrumental for reaching long-term financial goals. Past research has shown that generating arguments in favor of a position can boost the strength of that position (Wänke, Bohner, & Jurkowitsch, 1997), and similarly, we expected that listing reasons a savings account is instrumental for financial goals would heighten its perceived instrumentality. The remaining participants who were in the control condition did not complete this reason-listing task.

All participants then evaluated the instrumentality of, and the internal-credit afforded by, a savings account. A two-item instrumentality scale asked how helpful a savings account is for reaching long-term financial goals, and in making such goals more likely to be accomplished (1 = *Not at all*, 7 = *Extremely*; $r = .82$, $p < .001$). This measure also serves as a manipulation check

of our heightened-instrumentality manipulation. A two-item internal-credit scale assessed the extent using a savings account takes away internal attributions of credit to the consumer by securing and bringing about long-term financial goals instead of the consumer (1 = *Not at all*, 7 = *Extremely*; $r = .81, p < .001$). This measure serves as our key dependent variable of internal attributions of credit afforded to a consumer as a consequence of heightening instrumentality of a savings account. The two sets of measures were counterbalanced (for all measures and manipulations, see Appendix).

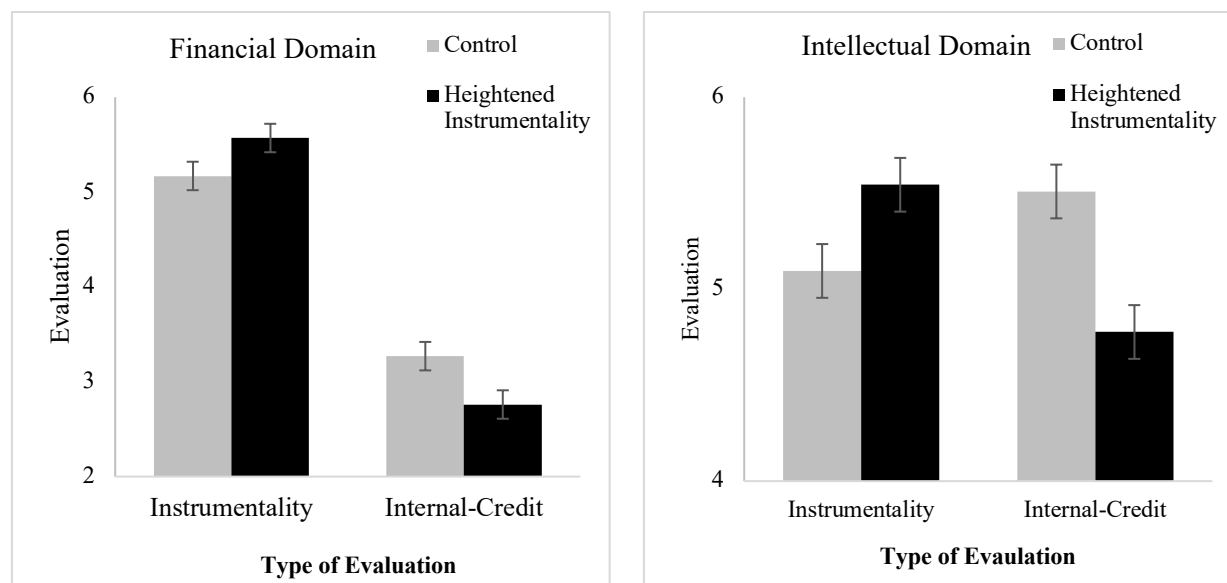
To establish robustness of our effect, we replicated this trade-off in both the financial and intellectual domain. Participants considered importance of proximal intellectual goals and the role paper-pencil might play with respect to such goals. Participants assigned to the heightened instrumentality condition additionally generated two reasons paper-pencil is helpful for such intellectual goals. Participants in the control condition did not generate two reasons. All participants then rated the instrumentality and the internal-credit afforded by paper-pencil, using the same two instrumentality items ($r = .71, p < .001$) and two internal-credit items ($r = .83, p < .001$) used for the savings account, but adapted to paper-pencil. Again, measures were counterbalanced. Finally, participants reported demographics (age, gender).

Results and Discussion

Financial Domain. First, as we expected we found that participants who evaluated a savings account as higher in instrumentality also tended to evaluate it as affording less internal-credit. An overall predicted negative correlation was observed between instrumentality and internal-credit evaluations of a savings account ($r = -.86, p < .001$).

Next, a 2 (instrumentality: heightened vs. control) \times 2 (evaluation: instrumentality vs. internal-credit) mixed ANOVA showed the main effect of evaluation ($F(1, 214) = 144.27, p < .001$); as we expected, the savings account was perceived as offering more instrumentality than affording internal-credit. Furthermore, the predicted interaction was also significant ($F(1, 214) = 5.35, p = .02$). Heightening instrumentality of a savings account (vs. control) increased the perceived instrumentality of a savings account ($M = 5.57$ vs. 5.17 ; $t(214) = 2.04, p = .04$), indicating our manipulation was successful. Importantly, heightening instrumentality (vs. control) also reduced the internal-credit afforded by the savings account ($M = 2.76$ vs. 3.27 ; $t(214) = -2.40, p = .02$). Thus, as we predicted, heightening the perceived instrumentality not only increased perceived instrumentality of a savings account for attaining long-term financial goals, but also reduced the internal-credit afforded to a consumer using such means to attain their goals (see Figure 3, left panel).

Figure 3. Instrumentality and Internal-Credit Evaluations of Savings Account (Financial Domain) and Paper-Pencil (Intellectual Domain) as a Function of Heightening Instrumentality



Intellectual Domain. Replicating these results, we first observed the predicted negative correlation between instrumentality and internal-credit evaluations of paper-pencil ($r = -.22, p = .001$). This correlation is weaker than the one we observed for a savings account presumably because a savings account is higher in instrumentality than internal-credit (baseline), but paper-pencil is higher in internal-credit than instrumentality. Heightening instrumentality is consistent with baseline assessments of a savings account as highly instrumental, but conflicts with baseline assessments of paper-pencil as affording internal-credit. Nonetheless, the correlation is still negative and significant. Remarkably, heightening instrumentality of paper-pencil completely reverses baseline perceptions, reducing internal-credit below instrumentality.

Next, a 2 (instrumentality: heightened vs. control) \times 2 (evaluation: instrumentality vs. internal-credit) mixed ANOVA showed only the predicted interaction ($F(1, 212) = 10.71, p = .001^1$). Heightening instrumentality (vs. control) increased perceived instrumentality of paper-and-pencil ($M = 5.54$ vs. 5.09 ; $t(212) = 2.35, p = .02$), again indicating our manipulation heightening instrumentality was successful. Heightening instrumentality (vs. control) also reduced the internal-credit afforded ($M = 4.78$ vs. 5.51 ; $t(212) = -2.69, p = .008$; Figure 3, right panel). Notably, unlike for the savings account, for paper-pencil the main effect of evaluation-type was not significant ($p > .33$), which can be expected because for paper-pencil baseline internal-credit was higher than instrumentality and heightening instrumentality completely reversed these evaluations and eliminated the main effect of instrumentality. In sum, heightening instrumentality of savings account and of paper-pencil increased perceived instrumentality of

¹ Degrees of freedom differ for analyses because two participants did not respond to the focal measures of instrumentality and internal-credit for the intellectual domain.

these products for their respective goals, but more importantly, as we predicted, also reduced the internal-credit afforded by these means for pursuit of these goals.

Across two different types of goals—distal financial goals and proximal intellectual goals—we observed a negative correlation between means' perceived instrumentality and the internal attribution of credit afforded by such means. While a savings account was perceived as more instrumental than as affording internal-credit in a baseline condition, paper-pencil was perceived as affording more internal-credit than instrumentality in a baseline condition. Even then, a negative correlation was observed between instrumentality and internal-credit afforded by both products. Furthermore, while heightening instrumentality, expectedly, increased the perceived instrumentality of the products, key to our theorizing, it also reduced the internal-credit the products were seen to afford. A post-test asking participants from a similar pool opened reasons why they thought using pencil-paper reduces internal-credit indicated that using this product meant they no longer would be doing intellectual tasks “in their head” and would instead “need to rely on [pencil-paper] writing out the problem step-by-step.” In reality, people fully control their savings accounts and writing instruments, they have full ownership over and choice to use such means during goal pursuit.

Across Studies 1 and 2, using both correlational real-world data and experimental manipulation, we demonstrate that heightening the instrumentality of means to a goal can undermine the degree of internal-credit afforded to an individual for goal success. Entrepreneurs crediting instrumental means (e.g., their team) for the success of their business, give less credit to themselves for that success. And, people for whom the instrumentality of a means is heightened (e.g., by listing two reasons why that means is helpful) say that using that means would afford

them less internal-credit for goal success. But could this trade-off result in a perverse preference for less instrumental means when people desire internal-credit, as we theorize?

In study 3, we test our proposition that people prefer instrumental means significantly less when they have a high need for internal-credit. First, to replicate ample past research, we test whether people are more likely to choose instrumental means when their goals are active versus not. Such a choice would be rational because goal activation should increase preferences for more instrumental means with which to accomplish those goals. For example, people should be more likely to choose more instrumental savings over checking accounts when a goal to be financially responsible is active (vs. not). We then test our proposition—that this preference for more instrumental means when a goal is active (vs. not) is attenuated among people with a high need for internal-credit. They no longer prefer means that are more instrumental for serving their goals when goals are active (vs. not). Finally, we test that this effect arises because preferences for more instrumental means are reduced among people who seek internal-credit and see being a financially responsible person as central to their identity. These predicted findings are perverse because for people who deem financial success an identity-central goal, maximizing financial performance should be especially important. Yet, we expect that because of their need for internal-credit, they would prefer instrumental means that improve financial performance less than people for whom financial goals are less important despite their goal of financial performance being highly active. For these people, need for internal-credit would get in the way of making a more instrumental choice that ensures better financial performance regardless of their own efforts or skills.

Study 3

Method

Three hundred adults from MTurk ($M_{\text{age}} = 36.2$, $SD_{\text{age}} = 12.3$; 51.7% female) completed a 2 (goal: active vs. control) \times continuous (chronic identity-centrality of the goal) between-subjects study. Five participants did not complete the first part of the study (i.e., the manipulation activating the goal), and their data were excluded from analysis leaving $n = 295$. In addition, three participants did not respond to the dependent variable, the identity-centrality measures, or both, which is reflected in the degrees of freedom in our analyses.

Participants randomly assigned to the *goal-active* [control] condition read: “*My Financial Goals* [Daily Routine]. In the space below, please write about your *long term financial goals* [daily routine]. Please discuss what *your long term financial goals are and why they are important* to you [you do on a normal or average day]. Use as much detail as possible.” To reduce hypothesis-guessing and demand effects, all participants then completed a 2-minute filler task descrambling sentences before we elicited preferences. Participants next responded to our dependent measure: relative preference for the more versus less instrumental means. They read, “In this task, we are interested in your opinion of different kinds of bank accounts. Please let us know your thoughts on the multiple-choice questions below.” They answered four questions designed to assess their relative preference for savings (more instrumental) over checking (less instrumental) bank accounts, “Do you feel it is more important/critical/valuable/essential to have a savings account or have a checking account?” (1 = *definitely checking*, 7 = *definitely savings*). We averaged responses to these four measures into an index of preference for more instrumental means ($\alpha = .89$). A pretest drawn from a similar population ($N = 50$ adult MTurk workers, $M_{\text{age}} =$

30.6, $SD_{age} = 9.1$; 32.0% female) indicated that a savings account ($M = 5.88$, $SD = 0.93$) is seen as more instrumental than a checking account ($M = 4.03$, $SD = 1.56$; $t(49) = 7.63$, $p < .001$) for long-term financial goals; whereas, the checking account ($M = 6.34$, $SD = 1.21$) is seen to afford greater internal-credit than the savings account ($M = 6.00$, $SD = 1.28$; $t(49) = -2.05$, $p = .046$; for full details of pretest see Appendix).

We then measured chronic identity-centrality of financial goals. Participants were asked: “How central to your identity is being a financially responsible person?” (1 = *Not at all*, 7 = *Extremely*). To ensure that our initial goal activation manipulation did not alter the chronic importance of financial goals, and to reduce socially desirable responding or demand effects, this identity-centrality measure was embedded within twelve other items, presented to participants in random order. Four of these twelve controls measured importance of financial goals: “How important is it for you to (a) save money, (b) be free of debt, (c) spend money responsibly, and (d) stick to a reasonable budget” (1 = *Not at all important*, 7 = *Extremely important*; $\alpha = .84$). Four controls measured importance of an unrelated health goal ($\alpha = .92$) and four measured the importance of self-efficacy ($\alpha = .88$). Finally, as a manipulation check of means instrumentality participants were also asked: “Which account do you feel is better for achieving your financial goals: a savings account or a checking account?” (1 = *definitely checking*, 7 = *definitely savings*) followed by demographics (gender, age, income) and an open-ended item assessing hypothesis guessing.

Results and Discussion

Control analyses and manipulation checks. As we expected, a regression predicting importance of financial goals as a function of goal activation (active = -1; control = 1), mean

centered identity-centrality ($M = 5.56, SD = 1.14$), and their interaction showed only a main effect of identity-centrality ($b = 0.29, SE = .05, t(287) = 6.17, p < .001$). Thus, financial goals are more important among people who also consider these goals to be identity-central. This finding is in line with our proposition that identity-central goals are likely among a consumer's most important goals. Despite viewing financial goals as more important, we expect it is these people who will reduce their preferences for these means that are more instrumental to financial performance, because they seek internal-credit and perceive a trade-off between means instrumentality and internal-credit. Moreover, our goal activation manipulation did not increase chronic goal importance ($p = .75$), nor did goal activation differentially increase the chronic importance of financial goals among participants who considered this goal identity-central ($p = .23$).

A regression predicting instrumentality of the means from identity-centrality, goal-activation, and their interaction also showed, as expected, only a significant effect of the goal activation manipulation ($b = 0.30, SE = .12, t(287) = 2.50, p = .01$) such that savings accounts were perceived to be more instrumental when the goal was active ($M = 4.74, SD = 2.02$) versus not ($M = 4.14, SD = 1.97$). This result replicates prior literature demonstrating that when goals are activated, instrumental means are evaluated more favorably (e.g., Markman and Brendl 2005). The non-significant main effect of identity-centrality, and its non-significant interaction with goal-activation, further implies that people with identity-central goals see instrumental means to be just as instrumental as people without such goals and they do not fail to recognize the relative instrumentality of means. Thus, any shift in preference toward a less instrumental

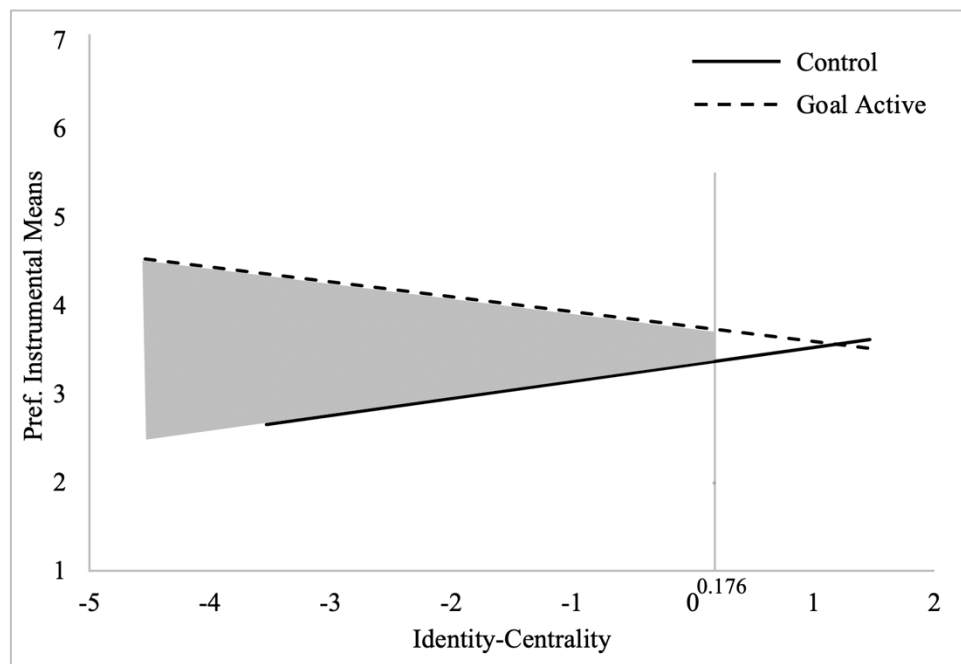
means does not occur because they see the more instrumental means as less instrumental to their financial performance goal.

Hypothesis testing. A regression on relative preference for the more instrumental means as a function of goal activation (active = -1; control = 1), mean centered identity-centrality ($M = 5.56$, $SD = 1.14$), and their interaction showed an expected main effect of goal activation ($b = 0.22$, $SE = .09$, $t(287) = 2.29$, $p = .02$); goal activation increased preference for the more instrumental means ($M = 3.77$, $SD = 1.69$) compared to the control condition ($M = 3.34$, $SD = 1.52$). Key to our theorizing, there was a significant goal \times identity-centrality interaction ($b = 0.19$, $SE = .08$, $t(287) = 2.35$, $p = .02$). We used the Johnson-Neyman technique for identifying regions in the range of the moderator variable (identity-centrality, mean-centered) in which the effect of the independent variable (goal activation) on the dependent variable (preference for the more instrumental means) is significant (Hayes & Matthes, 2009; Johnson & Neyman, 1936; Spiller et al., 2013). The Johnson-Neyman point for $p < .05$ for the identity-centrality moderator occurred at 0.176 standard deviations above the mean of identity-centrality. Participants for whom financial goals are less central to identity (below 0.176) express higher relative preferences for the more instrumental savings accounts when financial goals are active (vs. not).

This result replicates prior literature, whereby more instrumental means are evaluated more favorably when a goal is active (vs. not). However, participants for whom financial goals are more central to identity (above 0.176) evaluate the two accounts equivalently. Follow-up spotlight analysis (± 1 SD of identity-centrality) on relative preferences for the more versus less instrumental means showed: (a) at lower levels of identity-centrality, people in the goal active (vs. control) condition preferred the instrumental means ($M_{\text{goal-active}} = 3.98$ vs. $M_{\text{control}} = 3.11$; $b =$

-0.44, $SE = .13$, $t(287) = -3.29$, $p = .001$), (b) this preference for instrumental means was attenuated at higher levels of identity-centrality ($M_{\text{goal-active}} = 3.56$ vs. $M_{\text{control}} = 3.57$; $b = 0.01$, $SE = .13$, $t(287) = 0.04$, $p = .97$). Furthermore, higher identity-centrality increased the preference for the instrumental means marginally among non-goal-active participants ($b = 0.20$, $SE = .12$, $t(287) = 1.70$, $p = .09$), as may be expected, but marginally reduced preferences for instrumental means among participants for whom financial goals were activated ($b = -0.19$, $SE = .12$, $t(287) = -1.62$, $p = .107$; see Figure 4).

Figure 4. Preference for More (vs. Less) Instrumental Means as a Function of Goal Activation and Identity-Centrality of the Goal



Thus, we observed that (a) consumers prefer more instrumental means when their goals are active (vs. not), as found in past research (e.g., Brendl et al., 2003; Ferguson & Bargh, 2004; Markman et al., 2007); however, (b) importantly, this preference for more instrumental means when financial goals are active (vs. not) is attenuated among people who seek internal-credit, and

(c) among people with active financial goals, the preference for instrumental means reduces as people seek internal-credit because these activated financial goals are seen as central to identity. Ironically, as we expected, we also found that financial goals are more important for people who seek internal-credit on such goals because those goals are more identity-central goals; yet these people were the ones to not prefer instrumental means to less instrumental ones when their financial goals were activated, and to prefer instrumental means significantly less than people who reportedly did not perceive financial goals as important or as defining who they are.

Notably, we predicted and observed attenuation rather than a reversal of preference for instrumental means under high identity-centrality. This non-reversal did not occur, as our manipulation checks showed, because financial goals are in general more chronically active among people for whom such goals are identity-central, and the goal activation manipulation might have been more impactful on people with less central (and therefore less chronically active) financial goals. Rather, it seems the effect attenuated but did not reverse because people do not blatantly seek impediments; rather they reduce preferences for the more instrumental means, as we theorized.

Study 4 was designed to replicate the findings of Study 3 and further show the role internal-credit needs might play in reducing preferences for more instrumental products, but (a) in a different (academic) goal-domain and (b) using both a manipulation of identity-centrality and measure of chronic identity-centrality. The design was a 2 (situational identity-centrality: primed vs. control) \times continuous (chronic identity-centrality) between-subjects design in which, for half the participants, identity-centrality of math goals was primed before making a choice between a more instrumental means (using calculator for a test) versus a less instrumental means

(only paper and pencil). Students also indicated how chronically-central math goals were to their identity after choosing. As in Study 3 examining savings and checking accounts for financial goals, we conducted a pretest of calculator and pencil and paper for intellectual goals (for full details see Appendix). This pretest, drawn from a similar population as in Study 4 ($N = 45$ students, $M_{\text{age}} = 27.2$, $SD_{\text{age}} = 7.2$; 42.2% female), indicated that a calculator is seen as more instrumental ($M = 6.17$, $SD = 0.78$) than a pencil and paper ($M = 5.54$, $SD = 1.17$; $t(44) = -3.06$, $p = .004$) for math performance goals; whereas, pencil and paper ($M = 4.82$, $SD = 2.21$) is seen to afford greater internal-credit than the calculator ($M = 2.24$, $SD = 1.26$; $t(44) = 6.27$, $p < .001$).

We expect need for internal-credit to be higher among those with chronically high identity-centrality of math performance goals, and these students will show a reduced preference for the instrumental means (i.e., the calculator). In addition, we expect situationally priming the identity-centrality of math performance goals will also evoke an increased need for internal-credit and thus reduce preference for the more instrumental means. These effects will be additive, and we expect to observe two main effects but no interaction.

Study 4

Method

Two hundred university students were targeted to complete this study for compensation, 198 participated ($M_{\text{age}} = 26.1$, $SD_{\text{age}} = 7.1$; 41.4% female). The study employed a 2 (situational identity-centrality: primed vs. control) \times continuous (chronic identity-centrality) between-subjects design. After consenting to participate, students were instructed to imagine enrolling in a Quantitative Reasoning course offered by the university focused on analyzing topical, real-life problems from a quantitative perspective.

Then, students were shown an email from the professor stating that the course will use basic algebra, geometry, and mathematical theories to analyze complex, real-world problems. Further, the email outlined a policy of the course: to give students the option to only use pencil and paper on quizzes, the midterm, and the final exam or to use a basic calculator. Students saw images reinforcing the choice they would have to make (see Appendix).

Students were randomly assigned to either the identity-central primed or control condition. Participants in the control condition received no further information about the course policy, while participants in the situationally-primed identity-centrality condition were further reminded they would have to write their names at the top of the test. This manipulation of identity-centrality was adapted from Shu and colleagues (2012), who showed that signing one's name at the beginning of a test can increase the centrality of the test to one's identity.

Students next responded to our two dependent measures including choice of, and relative preference for, the more instrumental means: (a) "Which would you choose to use on the tests?" (-1 = *Pencil & Paper*, 1 = *Calculator*) and (b) "How strong is your preference?" (1 = *Strongly Prefer Pencil & Paper*, 6 = *Strongly Prefer Calculator*). Recall, a pretest had confirmed a calculator compared to just pencil-paper is more instrumental but also affords less internal-credit for math performance goals. To reduce the possibility that the choice of means would influence the identity-centrality measure, participants first responded to two items. They were asked to indicate whether their major was math-related (1 = *yes*, 2 = *no*) and to what extent their major relied on strong math skills (1 = *Not at all*, 7 = *Extremely*). The second item was also used to rule out the alternative explanation that math skill, rather than the identity-centrality of math goals, was driving our results. We elicited chronic identity-centrality of math performance by asking

participants (a) “To what extent would you call yourself a ‘math person’?” and (b) “How central to your identity is being good at math?” (1 = *Not at all*, 7 = *Extremely*), and we averaged these items into a single index of chronic-identity-centrality ($r = .76, p < .001$).

To assess the relationship between identity-centrality and self-enhancement motivations, as well as mastery motives, students also responded to: “How important to you is it that your professors recognize your math skills?” and “How important is it to you to feel that you have mastered math?” (1 = *Not at all*, 7 = *Extremely*). We also measured two general attribution tendencies, including (a) chronic internal-crediting (“When good things come my way, it is usually because of something I did”) and (b) chronic external-crediting (“Most of the good things in my life are because some external person or force made it so” (1 = *strongly agree*, 7 = *strongly disagree*). Finally, all students completed demographic measures (gender, age, and major) before being thanked and paid for their participation.

Results and Discussion

Controls and manipulation checks. First, students situationally primed with identity-centrality indicated math was as chronically central to their identity ($M = 3.80, SD = 1.67$) as those not situationally primed with identity-centrality ($M = 3.59, SD = 1.84; p > .403$). This result implies that the situational priming did not alter the chronic identity-centrality of math performance goals, and that our chronic measure captured a stable tendency. Second, students situationally primed with identity-centrality of math performance goals did not differ in how much their major relied on math compared to those not primed ($ps > .140$); however, as would be expected, those students whose major was math-related were more likely to hold math goals as

chronically identity-central ($M = 4.81, SD = 1.31$) compared to those students whose major was not math-related ($M = 3.17, SD = 1.48; t(196) = 7.93, p < .001$).

Third, we regressed situational identity-centrality (control = -1, primed = 1), mean-centered chronic identity-centrality ($M = 3.69, SD = 1.76$), and their interaction on (a) self-enhancement motives, and (b) in a different regression, on mastery motives. The following effects of interest were observed. First, with respect to self-enhancement motives, there was a significant effect of the situational prime, such that those in the situationally primed identity-central condition ($M = 3.95, SD = 1.80$) reported a greater self-enhancement motive than those in the control condition ($M = 3.37, SD = 1.93; t(194) = 2.13, p < .035$). There was also a main effect of chronic identity-centrality, such that higher identity-centrality was associated with greater enhancement motives ($b = 0.69, SE = .06, t(194) = 11.83, p < .001$). The interaction between these factors was not significant ($p > .405$). Taken together these effects of identity-centrality on heightened enhancement motives supports our claim that self-sabotaging occurs when people are motivated to enhance their ego in a domain that is central to their identity.

Next, with respect to mastery motives, this analysis showed a main effect of chronic identity-centrality ($b = 0.64, SE = .06, t(193) = 11.32, p < .001$); but, no effect of the situational prime, nor of their interaction ($ps > .19$). We did not theorize an effect of identity-centrality on mastery motives, and the finding is unstable, yet it is interesting and makes sense that people for whom goals are identity-central also seek mastery in the goal domain (for further discussion of mastery motivations, refer to the general discussion). Thus, both self-enhancement and mastery motives are associated with identity-centrality of the performance goal, which we would expect. We both assess the effect of identity-centrality on these motives, and also include these two

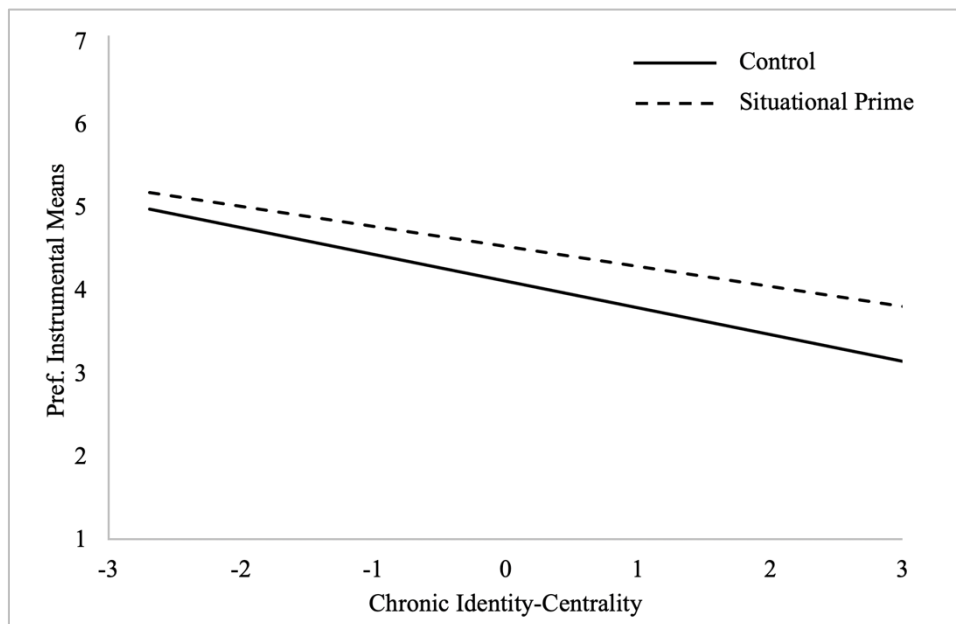
motives as covariates in a supplementary analysis predicting preference, to better understand the underlying motivations driving choice during pursuit of identity-central goals.

Hypothesis testing. A logistic regression predicting the effect of situational identity-centrality (control = -1, primed = 1), mean-centered chronic identity-centrality ($M = 3.69$, $SD = 1.76$), and their interaction on choice of the more instrumental means (calculator = 1, pencil-paper = -1) showed a main effect of situational identity-centrality ($b = -0.32$, $SE = .16$, $\chi^2(3, N = 198) = 3.83$, $p = .05$). As we predicted, students primed with identity-centrality were less likely to choose the calculator (62%) than students in the control condition (77%). A main effect of chronic identity-centrality also emerged ($b = -0.26$, $SE = .09$, $\chi^2(3, N = 198) = 7.37$, $p = .007$), replicating the results of Study 3, such that as chronic centrality of math performance goals increased, the probability of choosing the calculator—i.e., the more instrumental means—decreased. The interaction between these factors, as expected, was not significant ($p > .34$).

We replicated these results on preference for the more instrumental means (calculator). Results of this analysis also showed a main effect of situational identity-centrality ($b = -0.21$, $SE = .11$, $t(194) = -1.95$, $p = .05$); situational identity-centrality reduced preference for the instrumental means ($M = 4.07$, $SD = 1.59$) compared to control ($M = 4.55$, $SD = 1.55$). Furthermore, chronic identity-centrality also reduced preference for the more instrumental means ($b = -0.28$, $SE = .06$, $t(194) = -4.58$, $p < .001$), replicating Study 3. The interaction between these factors, as we expected, was not significant ($p = .51$; see Figure 5)².

² As supplementary analyses, we also performed two similar regressions of situational identity-centrality, mean-centered chronic identity-centrality, and their interaction on both (a) choice of and (b) preference for the more instrumental means, with self-enhancement and mastery motives included as covariates, to assess whether these factors account for our results. Findings indicate that (a) adding these two motives into our model did not alter the predictive capacity of the situational prime on choice, and neither motive was a significant predictor of choice of ($p > .34$; though, the predictive capacity of chronic identity-centrality on choice reduced only directionally ($p = .16$). Additionally, findings indicate that (b) adding these two factors into our model did not alter the predictive capacity

Figure 5. Preference for More (vs. Less) Instrumental Means as Function of Situationally-primed and Chronic Identity-centrality of Math Performance Goals



This study replicated the results of Study 3, which showed that people who are likely to seek internal-credit because they perceive financial goals as central to their identities prefer instrumental means less, but instead in the context of more proximal academic goals. It additionally showed that making math goals identity-central by situationally linking them to a student's identity—through subtle reminders of writing one's name at the top of the math test—also resulted in similar effects. Logically, math performance (e.g., getting an A) is improved when the most instrumental means available (e.g., a calculator) are used for goal pursuit, and a

of either the situational prime or chronic identity-centrality on preference, and neither self-enhancement nor mastery motives was a significant predictor of preference for means ($ps > .28$) in this model. We discuss this supplementary analysis further in the results discussion of Study 4. In addition, to rule out that having strong math skills was reducing preference for the calculator (e.g., because the student felt they did not need to rely on the more instrumental means) we also performed two regressions of situational identity-centrality, mean-centered chronic identity-centrality, and their interaction on both (a) choice of and (b) preference for the more instrumental means, controlling for math skills. Math skill was not a significant predictor of choice in either model ($ps > .33$) and the main effects of situational and chronic identity-centrality remained significant.

pretest confirmed people perceive this to be the case. Nevertheless, we find students' preferences for this more instrumental means are reduced when math goals are central to their identity. Importantly, our study controlled for anticipated effort—by the professor indicating the “basic math” tested can be accomplished “as quickly and effectively” using either means. Instead, the primary distinction between these two means driving preferences was the degree to which they were associated with instrumentality, and therefore traded-off with internal-credit. These findings thus are important because they show that identity-centrality, both measured and manipulated, reduces preferences for instrumental means. Moreover, that identity-centrality (both measured and manipulated) reliably increased self-enhancement motives, suggests that self-sabotaging is indeed motivated by need for internal-credit.

Studies 1 and 2 showed a trade-off between the instrumentality of a means and the internal-credit afforded, employing coding of real-world outcomes and experimental methods, respectively. Studies 3 and 4 showed this trade-off has implications for reducing preferences for instrumental means during goal pursuit among people who need internal-credit because they perceived these goals as central to identity. Ironically, Study 3 also showed that for identity-central goals where people seek internal-credit are also their most important goals; thus, to maximize success on such goals, they reasonably should not only put forth their best efforts but also choose the most instrumental means. These are the very goals where consumers should not sacrifice instrumentality for internal-credit because ensuring goal success should be paramount. Nonetheless, from these data, it appears that people who desire internal-credit for identity-central goals may be making this trade-off because they presume they will be successful on these goals. Ample research shows that people tend to have unduly favorable self-views and tend to be

optimistic with regard to success in important domains of their lives because success can enhance ego and maintain identity (Kruger & Dunning, 1999; Sharot, 2011; Weinstein, 1980). Our data, compatibly, suggest the reason people may prefer less instrumental means when they seek internal-credit is because they anticipate success on these identity-central goals. Study 5 was designed to test this theorizing—that people prefer less instrumental means when they have a high need for internal-credit because they presume they will be successful on their identity central goals. Toward this end, in Study 5, we directly measured chronic need for internal-credit, and we measured anticipated goal success. Based on our theorizing, we predicted that people with a high need for internal-credit will prefer less instrumental means because they presume success on these identity-central goals.

Study 5

Method

Two hundred and fifty-one adults from MTurk ($M_{\text{age}} = 37.61$, $SD_{\text{age}} = 18.27$; 53.4% female) completed a continuous (anticipated goal success) \times continuous (chronic internal-credit need) between-subject study. Three participants did not respond to the prompt (i.e., typing “I don’t know” or gibberish), leaving $n = 248$. To ensure self-esteem does not alternatively explain our findings, and we do not believe it can, all participants first completed the self-esteem scale ($\alpha = .91$; Rosenberg, 1965).³ Also, identity-centrality of financial goals was made salient for all participants via a writing task about why long term financial goals are an important aspect defining who they are as a person (see Appendix).

³ Those low in self-esteem may choose better products to compensate for their inadequacies (Aronson & Mettee, 1968) or worse products to protect their ego (Martin et al., 2003). Alternatively, those high in self-esteem may choose better products to maximize expectancy and enhance their ego (Tice, 1991) or worse products to challenge themselves to learn (Waschull & Kernis, 1996).

Germane to our main investigation, participants then answered questions about their anticipation of goal success (“How likely do you believe it is that you will reach your long term financial goals?” and “How successful do you feel you will be at your long term financial goals?” both 1 = *Not at all*, 7 = *Extremely*), which we averaged into an index of anticipated goal success ($r = .80, p < .001$). Participants also completed control items (e.g., task ease and confidence in abilities) and a two-item manipulation-check regarding identity-centrality adapted from the identity-centrality measures in Study 4 ($r = .44, p < .001$). We then elicited internal-credit need, asking “When I do good things, it is” (1 = *Always because of who I am as a person*, 6 = *Always because of the situation I am in*), with higher values on this scale indicative of greater chronic need for internal-credit (Greenwald, 1980).

Finally, participants responded to our dependent measure: relative preference for the more versus less instrumental means, “Do you feel it is more important/ critical/ valuable/ essential to have a savings account or have a checking account?” (1 = *definitely checking*, 7 = *definitely savings*), which we averaged into an instrumental means preference index ($\alpha = .88$). These account types are equivalently owned by the person (ruling out that familiarity of, or sense of ownership over, the means is driving the effect) and also on effort (e.g., of managing money in the account). In addition, Studies 2-3 and the pretest of Study 3 confirmed the instrumentality-internal-credit trade-off of these accounts. Participants responded to demographic measures (age, gender, income) and an open-ended hypothesis-guessing item.

Results and Discussion

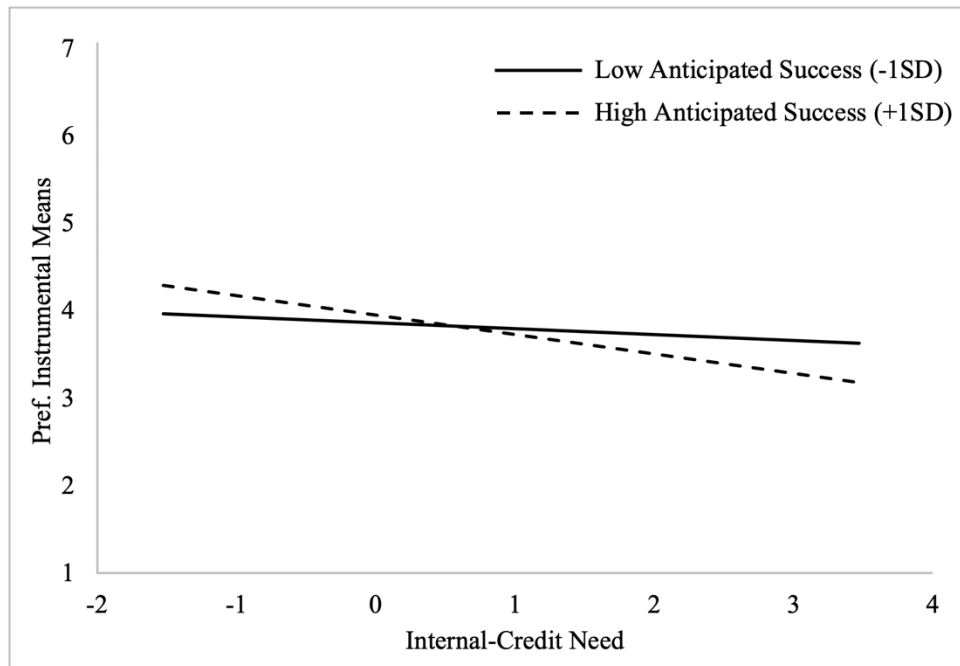
Manipulation check. Identity-centrality of financial goals was significantly above the scale mid-point ($M = 5.38, SD = 1.19; t(247) = 18.17, p < .001$), indicating participants generally

endorsed the identity-central goal elicited by the writing task. Data of three participants whose response to the identity-centrality score fell three-SD below the mean, and for whom the manipulation was therefore unsuccessful, were excluded from further analyses.

Hypothesis testing. Regression analyses predicting preference for the more instrumental means from mean-centered internal-credit need ($M = 2.51$, $SD = 1.32$), mean-centered anticipated goal success ($M = 5.18$, $SD = 1.33$), and their interaction showed only the predicted interaction ($b = -0.11$, $SE = .06$, $t(241) = -1.90$, $p = .058$, $\eta^2 = .01$; see Figure 6). Spotlight analysis (± 1 SD of anticipated success) showed greater internal-credit need reduced preference for the instrumental means ($b = -0.25$, $SE = .11$, $t(241) = -2.38$, $p = .02$) when success was anticipated; however, this difference was attenuated when goal success was not anticipated ($b = 0.03$, $SE = .11$, $t(241) = 0.29$, $p = .77$). Controlling for the ease of the task and participants' confidence in their abilities did not change these results, and neither was a significant predictor of preferences ($ps > .54$).

This finding suggests that people reduce preference for more instrumental means when they have a high need for internal-credit if they presume success on such goals. We found people with a high need for internal-credit to exhibit these perverse preferences whenever they anticipated successful outcomes. Thus, relative preference for less, in favor of more, instrumental means increases because people anticipate goal success, and is driven by their need for internal-credit. People prefer less instrumental products because they presume they will succeed at their identity-central goals and because they want to credit themselves (rather than the means) for that success. Indeed, making such a presumption may be crucial to maintaining a positive self-view and to seeing one's self as competent with regards to identity-central goals.

Figure 6. Preference for More (vs. Less) Instrumental Means as Function of Anticipated Goal Success and Internal-Credit Need



Importantly, this preference is distinct from past findings on self-handicapping (Berglas & Jones, 1978). People who self-handicap anticipate goal failure, and they therefore are motivated to protect their ego. As a result, they choose non-instrumental means (impediments), so they can externalize blame for their failure. Instead, we find that anticipating success can also increase preference for less instrumental means because success can then enhance the ego through internal-credit. Our objective in Study 6 is to test this full model—whether anticipation of failure results in people preferring impediments so they can externalize blame failure on such products, but anticipation of success results in people preferring less instrumental means so they can internally-credit for success. Thus, in Study 6, we additionally provide a self-handicapping option (i.e., an impediment to academic goal success, such as the choice to party with friends the evening prior to an important exam), also measure external-blame needs (along with internal-

credit needs), and we manipulate anticipation of success or failure. We predict anticipation of success (vs. failure) to increase preference for less instrumental means among people with internal-credit need but anticipation of failure (vs. success) to increase preference for impediments among people with external-blame need.

Study 6

Method

Four hundred and one students from a Midwestern university participated ($M_{\text{age}} = 28.23$, $SD_{\text{age}} = 8.17$; 62.3% female). The study employed a 2 (anticipation for goal: succeed vs. fail) \times continuous (chronic internal-credit need) \times continuous (chronic external-blame need) between-subject design. We also included two exploratory conditions (anticipation for goal: control vs. mixed) as additional between-subject manipulations. Our primary focus in this study was to contrast success with failure, to distinguish between self-handicapping and self-sabotaging. Thus, in our primary analyses below we examine the success and failure conditions, leaving $n = 199$ for our analyses. Supplementary analyses investigate differences with respect to the control and mixed conditions (see Appendix for full details). Some students did not respond to all items (reflected in the degrees of our freedom of analyses).

First, based on Study 4, which showed that students hold academic goals within their major as highly identity-central, we activated such goals among all students by asking them to imagine that tomorrow they will take the final exam for a class that is in their major. Students were then assigned randomly to an anticipation for goal condition. Students in the succeed [fail] condition read, “Based on what you know about this class, you feel it is certain [there is no chance] you’ll get an A.” The manipulation of the fail condition was adapted from the self-

handicapping literature (Berglas & Jones, 1978), whereby participants were given non-contingent feedback of success that elicited beliefs that they had little chance of succeeding on an upcoming goal (rather than making failure explicit). Finally, to complete the scenario and to elicit choice of the self-handicapping means, all students read, “A group of your friends plan to hang out late tonight. Everyone wants to get together one last time before people start to leave for the holidays.”

As a manipulation check of goal anticipation, students were asked, “Select the answer that best corresponds with this situation” (1 = *I probably will not get an A*, 2 = *I might get an A but I also might not*, and 3 = *I probably will get an A*) and “How likely do you feel you are to get an A?” (on a sliding scale from 0% to 100%). Then, to assess self-handicapping, students were asked, “Would you go hang out late with your friends late night before the exam?” (1 = *no*, 2 = *yes*), and students responding in the affirmative were classified as selecting the self-handicapping option. We expect students anticipating failure (vs. success) to prefer this option when their need for external-blame is high. A late night out with friends prior to an exam is an impediment to success and represents one means by which students self-handicap on an identity-central goal (Martin et al., 2003). Next, students responded to the open ended question, “Why did you decide to/not to hang out with your friends the night before the exam?”

To assess self-sabotaging preferences, students responded to two questions, embedded within three filler items. Specifically, students saw the prompt “How likely are you to use the following things to help you on the final exam,” followed by two instrumental means, “Reach out to a student who is smarter than you to tutor you” and “Send an email to the professor requesting extra time” (both 1 = *Not at all*, 7 = *Extremely*). Responses to these two items were

averaged into a self-sabotaging preference index ($r = .58, p < .001$). Both a smart tutor and extra time are highly instrumental to exam performance, and reduced preferences for such highly instrumental means represents self-sabotaging. We thus expect students anticipating success (vs. failure) to reduce preferences for these means when their need for internal-credit is high.

Next, to assess chronic external-blame need, students responded to, “To what extent do you like to avoid blaming yourself for getting bad grades” and “To what extent do you like to avoid feeling responsible for getting bad grades” (both 1 = *Not at all*, 7 = *Extremely*), and responses to these two items were averaged into an index of blame need ($r = .63, p < .001$). To assess chronic internal-credit need, students responded to, “To what extent do you like crediting yourself for getting good grades” and “To what extent do you like feeling responsible for getting good grades” (both 1 = *Not at all*, 7 = *Extremely*), and responses to these two items were averaged into an index of credit-need ($r = .56, p < .001$). Note that internal-credit need and external-blame need were negatively, albeit weakly, correlated ($r = -.10, p = .05$).

Finally, as a manipulation check of identity-centrality, students responded to, “To what extent does your academic performance define you as a person” and “To what extent are your grades central to who you are as a person” (both 1 = *Not at all*, 7 = *Extremely*), and responses to these two items were averaged into an index of identity-centrality ($r = .63, p < .001$). Finally, demographics (age, gender, student status, and major) were collected.

Results and Discussion

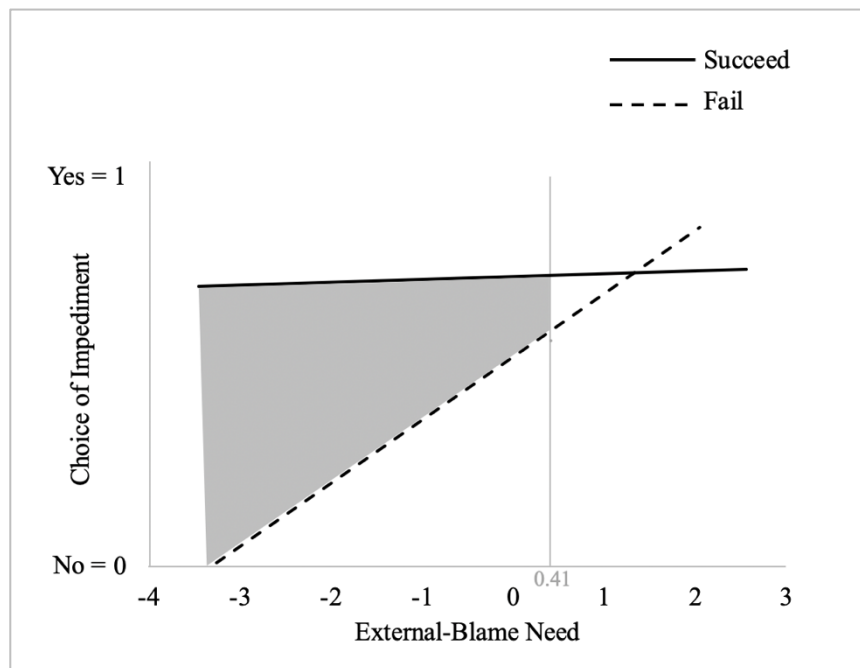
Manipulation Checks. First, we confirmed that identity-centrality of exam performance goals was high ($M = 4.94, SD = 0.98$; vs. scale-midpoint; $t(400) = 19.26, p < .001$). Next, a t-test revealed the success condition expected to be more successful ($M = 75.36, SD = 14.87$) than the

fail condition ($M = 57.09$, $SD = 25.00$; $t(197) = -6.26$, $p < .001$). The manipulation check of priming anticipation that employed the ordinal scale revealed the same effect ($M_{\text{success}} = 2.49$, $SD = 0.58$ vs. $M_{\text{fail}} = 2.00$, $SD = 0.77$; $t(195) = -5.05$, $p < .001$).

Self-Handicapping. To assess self-handicapping, we performed a logistic regression with anticipation condition (succeed = 1, fail = -1), mean-centered internal-credit need ($M = 5.39$, $SD = 0.89$), mean-centered external-blame need ($M = 4.45$, $SD = 1.36$), and two-way interactions between anticipation and blame-need, and anticipation and credit need on students' choice to go out with friends the night before the exam (no = 0, yes = 1). This analysis showed a main effect of anticipation ($b = -0.46$, $SE = .16$, $\chi^2(1, N = 197) = 7.98$, $p = .005$), such that those in the succeed condition were more likely to go out (74.5%) than those in the fail condition (54.5%). This analysis also showed a main effect of blame need ($b = 0.44$, $SE = .14$, $\chi^2(1, N = 197) = 10.14$, $p = .001$) such that greater blame need increased the likelihood of self-handicapping by going out with friends before the exam. Finally, the analysis showed an interaction between anticipation and blame need ($b = 0.37$, $SE = .14$, $\chi^2(1, N = 197) = 7.32$, $p = .007$). No other effects were significant ($ps > .55$).

To probe the interaction between anticipation and blame needs further, we used the PROCESS Macro for SPSS Model 1 (Hayes & Matthes, 2009; Spiller, et al. 2013) to examine the effect of condition on self-handicapping (i.e., by going out with friends the night before the exam) at different levels of the moderator variable, external-blame need. Results show this interaction is significant for external-blame need ≤ 4.85 (which is 0.41 SD above the mean of external-blame need, with 42.6% of the data falling below this point; see Figure 7).

Figure 7. Choice of Impediment as Function of Anticipated Goal Success Versus Failure and External-Blame Need



Thus, at high levels of external-blame need, all students chose the self-handicapping option; whereas, at low levels of external-blame need, choice of the self-handicapping option hinged on anticipation of failure (but not success). Specifically, given anticipated failure, the effect of external-blame need on choice was positive and significant ($b = 0.81$, $SE = .22$, $Z(197) = 3.68$, $p < .001$, 95% CI [0.38, 1.24]), such that greater blame need increased the likelihood of self-handicapping by going out with friends prior to the exam. However, given anticipated success, the effect of external-blame need on choice was attenuated and not significant ($p = .81$).

In sum, with respect to preferences for an activity that would impede a goal (i.e., going out with friends the night before), which is by definition a self-handicapping choice, we find that the underlying motivation for this choice is driven by the need to blame external factors for failure, but not by the need to credit internal-factors for success. Moreover, we find that the need

for external-blame impacts the choice of this impediment only when failure is made salient (i.e., for students who are certain they won't get an A), but not when only success is salient (i.e., for students who are "certain to get an A"). Thus, in this first part of our study, we replicate the findings of the self-handicapping literature, showing students anticipating failure on an identity-central goal choose an impediment to their goal, and we extend the self-handicapping literature by showing this choice hinges on their need to externalize blame for failure. Next, we turn to investigating self-sabotaging choices, exploring whether students anticipating success on this identity-central goal exhibit reduced preferences for the most instrumental means available (i.e., seeking out tutoring from a smarter student and requesting extra time on that exam), and that this preference hinges on their need to credit internal factors for their success.

Self-Sabotaging (Tutor & Time Preferences). To assess self-sabotaging, we performed a regression with anticipation condition (succeed = 1, fail = -1), mean-centered internal-credit need ($M = 5.39$, $SD = 0.89$), mean-centered external-blame need ($M = 4.45$, $SD = 1.36$), and two-way interactions between anticipation and blame-need, and anticipation and credit need on students' average preferences for self-sabotaging options (foregoing the tutor and not requesting extra time⁴). This analysis showed a main effect of external-blame need ($b = 0.61$, $SE = .06$, $t(193) = 9.50$, $p < .001$) such that greater need to externalize blame increased students' preferences for these self-sabotaging means (a point we return to in our general discussion). Central to our theorizing, this analysis also showed an interaction between condition and internal-credit need ($b = 0.27$, $SE = .06$, $t(193) = 2.80$, $p = .006$). No other effects were significant ($ps > .51$).

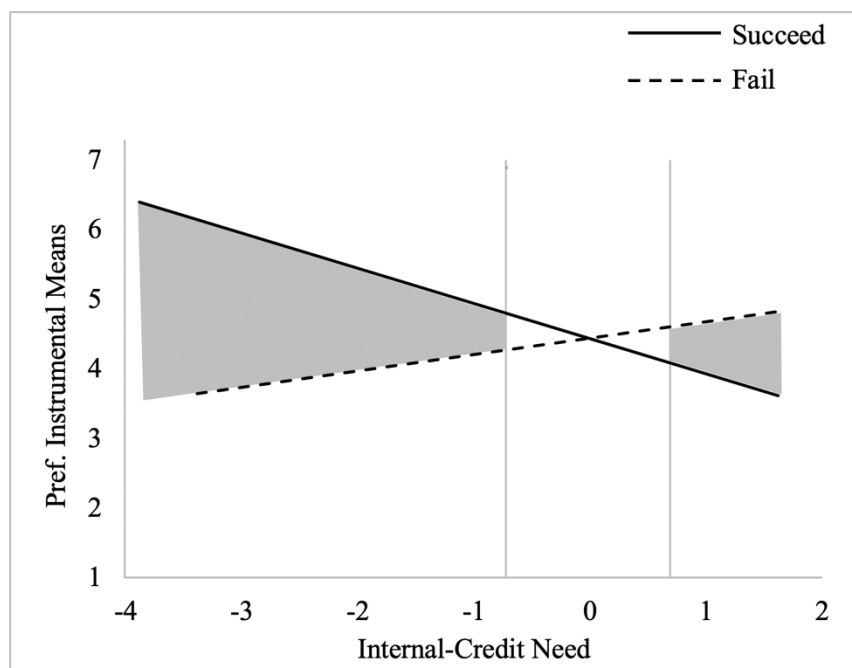
⁴ Results are the same when these items (Time, Tutor) are analyzed as separate self-sabotaging dependent outcomes.

To probe the interaction between anticipation condition and credit needs further, we again used the PROCESS Macro for SPSS Model 1 to examine the effect of condition on self-sabotaging (i.e., by reducing preferences for a tutor or requesting extra time) at different levels of the moderator variable (internal-credit need). Results show two Johnson-Neyman regions of significance: this interaction is significant for internal-credit need ≤ 4.66 (which is 0.73 SD below the mean of internal-credit need, with 18.09% of the data falling below this point) and is significant for internal-credit need ≥ 6.07 (which is 0.69 SD above the mean of internal-credit need, with 14.07% of the data above this point; see Figure 8). Critically, given anticipated success, the effect of internal-credit need on choice was negative and significant ($b = -0.51$, $SE = .17$, $t(195) = -3.00$, $p = .003$, 95% CI $[-0.84, -0.17]$), such that greater credit need increased the likelihood of self-handicapping (i.e., decreased preferences for getting a tutor or requesting extra time). However, given anticipated failure, the effect of internal-credit need on preference was attenuated and not significant ($p = .14$).

In line with our theorizing, when goal success is anticipated, students' preferences for instrumental means decreased as their need for internal-credit increased. Moreover, at low levels of internal-credit need, students who anticipated success (vs. failure) exhibited greater preference for instrumental means. This preference was reversed at high levels of internal-credit need, where students who anticipated success (vs. failure) exhibited lower preferences for instrumental means. This result underscores how internal-credit needs can get in the way of making the best choices for identity-central goals. Exam performance in one's major is a central component of maintaining identity, since doing poorly in one's major can threaten student's academic identity, while doing well can enhance student's academic identity. We find that students anticipating

success, and who have low credit-needs, made rational choices to ensure they will perform as well as possible—i.e., reaching out to peer tutors and requesting additional time from professors. On the other hand, we find students anticipating success, and who have high credit-needs, instead self-sabotage. They forego these highly instrumental means, which is suboptimal considering using these means facilitates performance, and by self-sabotaging they are risking falling short of their optimal performance.

Figure 8. Preference for Instrumental Means as Function of Anticipated Goal Success Versus Failure and Internal-Credit Need



In sum, we examined both self-handicapping and self-sabotaging, based on students' anticipation of either failure or success on an identity-central goal. As predicted, we found that handicapping and sabotaging are differentially driven by external-blame need and internal-credit need, respectively. Specifically, replicating past literature, students anticipating failure self-handicapped as their need for external-blame increased; however, self-handicapping did not

hinge on internal-credit need, and students anticipating success did not succumb to self-handicapping. Moreover, as we predicted and showing evidence of self-sabotaging, students anticipating success *reduced* their preference for the most instrumental means available (e.g., a smarter tutor, extra time) as their need for internal-credit increased. For students anticipating failure their need for internal-credit was not related to their preference for instrumental means, and they did not succumb to self-sabotaging. Thus, our final study provides evidence that self-sabotaging is driven by the need for internal-credit and occurs when goal success (but not failure) is anticipated, and that self-handicapping and self-sabotaging lead to unique consequences driven by different psychological processes.

General Discussion

People are known to prefer means that are most instrumental for securing their goals (Markman et al., 2007). In fact, the association between the most instrumental means and a goal is so strong and positive that when a goal is activated people are automatically reminded of, and choose, the most effective means (Fitzsimons & Bargh, 2003; Kopetz et al., 2012). Furthermore, a person's most important goals provide feedback to the person regarding who she is (Gollwitzer, 1986; Markus, 1983; Maslow, 1943). Thus, attaining important goals is believed to secure the person's identity, and by choosing the most instrumental means, a person can improve the likelihood of goal attainment and thus secure identity.

One caveat to these rational preferences was examined previously in the self-handicapping literature (Berglas & Jones, 1978; Higgins et al., 1990). Specifically, research had shown that people engage in self-handicapping (i.e., choose non-instrumental means that impede goal attainment) when they anticipate failure on an identity-central goal so they can blame the

means for their failure so as to protect their ego (Alter & Forgas, 2007; Harris & Snyder, 1986). These findings provide empirical evidence that ego-maintenance needs—and, specifically, the need to externalize failure—can lead to the violation of the predictions of goal systems theory. Providing an important, yet previously unspecified, counterpart to the self-handicapping literature, we propose that people also engage in self-sabotaging: i.e., when people anticipate success on an identity-central goal, their preferences for the most instrumental means are reduced, so they can credit themselves (rather than the means) for their success so as to enhance their ego. Thus, we predict and find evidence that this second fundamental ego-maintenance need—i.e., ego-enhancement—also violates the predictions of goal systems theory. Critically, we also distinguished between two types of ego-maintenance strategies—externalizing casual attributions for failure (external-blame) and internalizing casual attributions for success (internal-credit). Past research had shown support for the former possibility under identity-threat due to anticipated failure; we showed a prevalence of the latter in influencing preferences in the absence of any identity-threat due to anticipated success.

Adding new insights, we showed that people perceive a trade-off between instrumentality and internal-credit during goal pursuit (Studies 1 and 2), and that this trade-off reduces preferences for highly instrumental means when (a) an identity-central goal is activated (Study 3) and (b) when the identity-centrality of a goal is primed or measured (Study 4). Moreover, we show reduced preferences for highly instrumental means during pursuit of identity-central goals when goal success (but not failure) is anticipated and due to the need for internal-credit (Study 5 and 6). Finally, we show that self-handicapping and self-sabotaging are distinct (Study 6).

Study 1 showed the underlying trade-off between instrumentality and internal-credit in real world contexts, using observational data. Study 2 then experimentally heightened the instrumentality of different types of means serving different goals across two domains and showed that this undermines the internal-credit those means are seen to afford. Activating an identity-central goal (vs. control) resulted in self-sabotaging—i.e., reduced preferences for a more instrumental means, in favor of less instrumental one (Study 3). Further, both measuring and manipulating the identity-centrality of a goal elicited self-sabotaging (Study 4). As initial evidence of process and to show that anticipating success (but not failure) is a boundary condition, Study 5 activated an identity-central goal for participants and showed that only those participants (a) with high anticipation of success and (b) with high internal-credit need self-sabotage. Finally, to distinguish self-sabotaging from self-handicapping, and demonstrate their unique underlying motivational components, Study 6 manipulated anticipation of goal success and failure and showed that (a) self-handicapping occurs when people anticipate failure and need to externalize blame, whereas (b) self-sabotaging is distinct from self-handicapping and occurs when people anticipate success and need to internalize credit. Taken together, our six studies show that preference for means to identity-central goals hinges on anticipated goal outcomes (success or failure) and ego-maintenance needs (internal-credit and external-blame). Due to the trade-off between instrumentality and internal-credit afforded by a means, preferences for instrumental means are reduced during pursuit of identity-central goals when success is anticipated, because people seek means that afford an attribution of credit to the self (rather than the means) for success on such goals.

Theoretical Contributions

The current research presents a new theoretical model showing people value means based not only on instrumentality, and not only on ego-protection motives (e.g., external-blame need), but also on the degree to which means affords internal-credit. We proposed and found evidence supporting the proposition that the instrumentality of a means is inversely related to the internal-credit that means affords. Further, for goals central to a person's identity, the need for internal-credit for goal success is fundamental (Greenwald, 1980). High internal-credit need might thus reduce preference for more instrumental means during pursuit of identity-central goals. Past theorizing in the goals literature instead noted goals are best served by the most instrumental means. Diverging from this view, past theorizing in the self-handicapping literature had only addressed ego-protection needs, noting that when failure on identity-central goals is anticipated, people prefer impediments so as to externalize-blame for failure (Berglas & Jones, 1978). Our findings thus propose a novel contribution to goal systems theory (Kopetz et al., 2012; Kruglanski et al., 2002) and to the self-handicapping literature (Berglas & Jones, 1978; Higgins et al., 1990; Jones & Berglas, 1978) to suggest (a) a means' instrumentality trades-off with internal-credit and (b) during pursuit of identity-central goal, ego-enhancement needs can also shift preferences (when success is anticipated).

Our model also theoretically advances research on attribution. Attribution theory centers on how people make causal inferences about their experiences (Hastie, 1984; Kelley, 1973) to determine the cause of their own actions, with focus on explaining their own successes, as well as failures (Weiner, 1985). In order to maintain the ego, attributions made about the self tend to be biased, in that people tend look back at success and attribute it to internal factors but look

back at failure and attribute it to external factors (Greenwald, 1980; Malle, 1999; Martin et al., 2003). Drawing on the trade-off between internal and external causal explanations for events (Heider, 1958; Kelley, 1967; Passer, Kelley, & Michela, 1978), we proposed a trade-off between instrumentality of a means and the self-serving attributions people can make when using those means. This trade-off can reduce preference for the most instrumental means, in favor of less instrumental means, when people have a high need for internal-credit, as they do when pursuing identity-central goals. Future research should further examine when people are likely to perceive this trade-off, and which types of means are most susceptible to these trade-offs.

Importantly, past research had also shown that people sometimes choose more instrumental means under identity threat (Gao et al., 2009; Rucker & Galinsky, 2008) to reinstate identity. Interestingly, these findings are the opposite of what the self-handicapping literature had found, but also that research found an important anomaly for which it did not account—a reduced preference for more instrumental means in the control conditions, when identity-central goals were activated but not threatened. Our research explains that anomaly—that activation of an identity-central goal may have increased internal-credit need and reduced preference for the instrumental means in those studies. Our research also provides important reconciliation to the seemingly contradictory findings between the self-handicapping literature (identity threat → preference for impediments) and the compensatory consumption literature (identity threat → preference for instrumental means). One potential explanation is that in the compensatory consumption literature, the identity threat may have heightened the activation of failure and activated a need for external-blame, and participants may have sought means external to the self

(since no impediments were available), as they did in our Study 6 (where need for external-blame increased preferences for instrumental means: tutor and time).

Our findings are also important in light of research connecting effort to instrumentality (Labroo & Kim, 2009). Effort may be one aspect of a means that affords internal-credit—i.e., expending greater (vs. less) effort allows a person to make an attribution that the self is more responsible for goal attainment. But we additionally show aspects analogous to effort (i.e., extra time) can also impede on internal-credit. Our framework can thus explain Labroo and Kim's (2009) findings but they cannot explain ours. Future research might explore other aspects of means that afford internal-credit, and what types of additional effort do and do not afford internal-credit or external-blame. Furthermore, future research may investigate when time affords internal-credit (e.g., perhaps when it reflects increased commitment) and when it undermines it (e.g., perhaps when it reflects reduced competence).

Implications

Our findings are not an anomaly, nor do they only arise under restrictive conditions. We show that people can both approach and avoid instrumental choices during goal pursuit, and that this hinges on (a) the identity-centrality of a goal and (b) their anticipation of goal success or failure.

Ego trumps instrumentality, because ego-maintenance is fundamental to human functioning. Of course, goals studies do find preference for instrumental means, but quite often a) the goals considered are not central to the participant's identity (e.g., Brendl et al., 2003; Ferguson & Bargh, 2004; Markman et al., 2007), or b) preferences are assessed between instrumental (vs. goal-irrelevant, or vs. impedimental) objects (e.g., Fitzsimons & Shah, 2008;

Markman et al., 2007), rather than more (vs. less) instrumental ones. The goals-literature results also had not yet incorporated explanations given evidence on self-handicapping. When goals are central to identity, evidence of self-sabotaging existed in the literature (Gao et al., 2009; Labroo & Kim, 2009; Rhodewalt et al., 1984; Tucker et al., 1981), but such anomalies remained unexplained or were reframed as self-handicapping.

Additionally, literature on goals typically suggests that if people choose means that (a) obstruct their goals (e.g., go partying the night before a big exam) or (b) are less instrumental (e.g., forego a tutor in favor of studying alone) that such choices represents a failure or lack of self-control. Our findings suggest otherwise. Specifically, if an academic goal is central to a consumer's identity, these choices may represent an ego-based choice (i.e., partying the night before in order to externalize blame for exam failure; studying alone in order to internalize credit for exam success). Thus, our findings have important implications for the interventions designed to boost "self-control." For example, satiating ego-protection and/or ego-enhancement needs, by providing a source for external-blame and/or internal-credit, prior to their choice of means for identity-central goals may increase their preferences for the most instrumental means available and enhance the likelihood of goal success without jeopardizing these fundamental ego-maintenance needs.

People pursuing some of their most important goals can benefit from the present findings. By definition, less instrumental means are less effective during goal pursuit, and thus such preferences are suboptimal for maximizing goal expectancy. Although the self *could* be enhanced using means that allow for internal-credit, ultimately identity may suffer if the goal is not attained (e.g., failing a math exam) or is attained more slowly (e.g., taking longer to solve a

problem by hand and running out of time) or to a lesser degree (e.g., getting a B rather than an A). In work settings, employees defining themselves through their profession might prefer less effective teammates to see themselves, rather than instrumental co-workers, as responsible for goal attainment. This may result in projects developing more slowly or not reaching their highest potential. Even for everyday goals, such as commuting to work, people who strive to identify as independent (e.g., aging adults) may be less receptive to highly instrumental, autonomous cars—ultimately reducing road safety (Abraham et al., 2017; André et. al, 2018). In other critical domains, such as in medical contexts, one study found that depressed people who desperately desired to identify as “normal” seek less help for this illness (Farmer, Farrand, & Mahen, 2012), and even doctors may reject instrumental technologies that are seen to take away their credit for successfully diagnosing patients (Siddiqui, 2018), risking serious health-consequences by avoiding the most instrumental means. These findings thus have important implications for people in pursuit of some of life’s most important goals across a variety of settings, and potentially have implications for the overall well-being of people across a variety of consequential domains.

In terms of restoring preferences for instrumental means, our research offers clues on how to counteract suboptimal selection of means. Future research might test whether satiating internal-credit need or external-blame need restores preferences for instrumental means. Disentangling a goal from identity, while still maintaining the high desire for goal attainment, also may restore preference for the most instrumental means. Where disentangling the goal is not possible, research might examine whether reframing highly instrumental means as affording an attribution to the self (e.g., attributing the instrumental *choice itself* to internal factors such as

competence) restores preferences. Finally, leveraging the notion of the extended self (Belk, 1988; James, 1890), highlighting for people that instrumental means can be incorporated into the self (rather than be simply seen as external objects) may also stop people from self-sabotaging. In sum, designing these, and other, interventions to combat reduced preferences for the most instrumental means among people during pursuit of their identity-central goals offers many exciting avenues for future research.

CHAPTER 2. ENHANCING THE EGO THROUGH CHOICE OF LESS EFFECTIVE PRODUCTS

Joint with Aparna A. Labroo

Theoretical Background

More effective products improve performance on tasks they are designed to facilitate. For example, using calculator over pencil-paper to complete a math test can facilitate speed and accuracy in solving math problems, thereby improving performance on the test. Investing money in an index fund rather than picking individual stocks can facilitate higher investment returns, thereby improving long-term financial performance. People prefer products that best facilitate performance (Kruglanski et al., 2002; Lewin, 1935; Rosenberg, 1956)—they are known to spontaneously think of more effective products when considering any goal (Ferguson & Bargh, 2004; Shah, Friedman, & Kruglanski, 2002; Fitzsimons & Shah, 2008), and they evaluate products that facilitate performance more favorably after considering how these products could ensure success (Labroo & Lee, 2006; Markman & Brendl, 2005; Markman, Brendl, & Kim, 2007). By facilitating success on tasks they are designed for, more effective products can result in people feeling more accomplished. Feeling accomplished is a fundamental aspect of ego maintenance and thus, using more effective products can be fundamental to enhancing the ego.

Feeling accomplished, however, may also depend on whether people can attribute task performance to themselves. Positive self-views are fundamental to maintaining the ego (Brown, 1986; Steele, 1988; Taylor & Brown, 1998; Tesser, 1988), and in domains central to their identity, people prefer to attribute successful outcomes to themselves (Greenwald, 1980). On

such tasks, they consider themselves more skilled than the average person (Alicke, 1985; Dunning, Meyerowitz, & Holzberg, 1989; Kruger & Dunning, 1999; Svenson, 1981), and assume they will be successful in future outcomes (Metcalf, 1998; Sharot, 2011; Weinstein, 1980). Assuming future success can motivate people to take on challenging tasks (Fishbach & Labroo, 2007), and adopting such tasks can be an opportunity to attribute success to the self and enhance the ego. But when goals fall in domains central to identity and are therefore tied to ego maintenance, this might enhance a person's need to attribute success on the goal to internal factors.

Notably, in order to attribute an outcome to internal factors, by definition, people must not attribute that outcome to factors external to themselves (Gilbert & Malone, 1995; Heider, 1958; Hull, 1943; Kelley, 1967; Passer, Kelley, & Michela, 1978; Rotter, 1966; Weiner, 1985, 2018). Internal and external attributions fall on a bi-polar continuum, and people generally attribute outcomes to one or the other. For instance, one's competence could bring about an outcome (an internal attribution), or effective products could bring it about (an external attribution). It follows therefore that more effective products could be perceived as taking away internal-credit: the more an outcome is seen as having been brought about by an effective product, the less people may see it as having been brought about by their own internal factors. And when pursuing goals in domains that are identity-central, the need for ego-enhancing attributions, such as crediting internal factors for success, is likely to be especially high.

People may therefore reduce their preferences for more effective products in domains that are central to identity, and their situational or chronic need for internal-credit is likely to drive these reduced preferences. We term this—i.e., the preference for less effective products driven

by the need to ego-enhance by crediting the self for goal success—“self-sabotaging.” Notably, past research has shown that people sometimes choose products that can hurt goal performance—i.e., they “self-handicap”—to protect their ego, as they can blame these products in case they fail (Berglas & Jones, 1978). For example, students who anticipated failure on an intelligence test preferred to consume what they thought was a performance inhibiting (rather than performance enhancing) pill before the test so they could deflect blame for failure onto the pill. Our proposition is similar to these findings in the sense that both self-handicapping and self-sabotaging occur in service of the ego, but while self-handicapping serves an ego-protection need through the externalization of blame for failure, self-sabotaging serves an ego-enhancing need through the internalization credit for success. Thus, self-sabotaging is similar to self-handicapping in that it shows people may decline the most effective products, but is also independent of it as it focuses on a need to ego-enhance through internal-credit rather than to ego-protect through external-blame. This research thus significantly builds on the self-handicapping literature, showing a broader pervasiveness of reduced preference for the most effective products than previously understood and revealing a distinct mechanism for such preferences.

To test our theorizing, in Study 7, we investigate whether people with a chronic need for internal-credit tend to prefer less effective products in identity-central domains. In Study 8, employing a different domain, we provide converging evidence. We additionally test whether situationally enhancing identity-centrality also reduces preferences for more effective products, and these preferences are mediated by increased need for ego-enhancement through internal-crediting. Then in Study 9, we further test that preferences for less effective products arise when

people consider a domain as identity-central because those products are more ego-enhancing (i.e., afford more internal-credit). Finally, in Study 10 we further test process by showing if the need for internal-credit has been satiated, people no longer reduce preferences for more effective products.

All measures, manipulations, and exclusions in all experiments are disclosed. Across studies, target sample sizes were set in advance of data collection and determined in consideration of participant availability (e.g., subject pool size), collection method, and study design. We aimed for at least 50 observations per condition (Simmons, Nelson, & Simonsohn, 2011). We report procedures and analyses with full details in the paper and Appendix, and will make all datasets available for readers.

Study 7

In Study 7 we measure chronic need for internal-credit. We also measure the extent to which students consider math as central to their identity. We expect the more students have high chronic need for internal credit, the less they will prefer effective products when the goals served by such products are identity-central and can therefore serve an ego-enhancing need.

Method

To reduce demand effects and show robustness, we elicited preferences at time-1 and measured identity-centrality of math and chronic internal-credit need at time-2. Of 269 undergraduate and graduate students (49.0% female; $M_{\text{age}} = 26.93$, $SD_{\text{age}} = 7.92$) who completed a time-1 survey, 130 returned to complete a time-2 survey 6-weeks later (49.2% female; $M_{\text{age}} = 28.17$, $SD_{\text{age}} = 8.74$).

Preferences (time 1). At time-1, students read a scenario about a math class they imagined enrolling in. An email from the professor described course content and outlined a key policy of the course: students can use a basic calculator (more effective) or not (less effective, i.e., only paper and pencil) on all tests. After seeing images reinforcing the choice, they indicated: (a) “Which would you choose to use on the tests?” (-1 = *pencil & paper*, 1 = *calculator*) and (b) “How strong is your preference?” (1 = *pencil & paper*, 6 = *calculator*). To ensure choice was not impacted by math skills, students indicated “To what extent does your major rely on you having strong math skills” (1 = *Not at all*, 7 = *Extremely*). Identity-centrality was assessed ($r = .79, p < .001$; see below for exact wording), and participants then provided demographic measures (age, gender, major) before being thanked and paid.

Identity-centrality (time 2). In the time-2 survey, collected six-weeks later to assess impact of chronic traits on preferences, students indicated identity-centrality of the math domain—“To what extent would you call yourself a ‘math person’” and “How central to your identity is being good at math” (1 = *Not at all*, 7 = *Extremely*; $r = .86, p < .001$).

Chronic need for ego-enhancing attributions (time 2). Students also indicated chronic internal-credit need. They responded to four attribution tendencies about outcomes (i.e., causal beliefs regarding what brought about outcomes; Kelley, 1973; Malle, 1999; Ross & Nisbett, 1991). One of these measures—the extent participants chronically feel unable to attribute good outcomes to themselves—assessed chronic need for internal-credit (Greenwald, 1980). The other three items—need to attribute their bad outcomes externally (assessing chronic need for ego-protecting attributions), or attribute other people’s bad or good outcomes—were included to

control for the possibility that a need to blame external factors for failure, i.e., self-handicapping, is the underlying process (Berglas & Jones, 1978).

Participants additionally responded to established scales measuring chronic self-esteem (Rosenberg, 1965; $\alpha = .85$), implicit self-esteem (Gebauer, Riketta, Broemer, & Maio, 2008), locus of control (i.e., belief that outcomes are determined by chance, Sapp & Harrod, 1993; $\alpha = .51$), implicit theories (i.e., beliefs ability is fixed versus malleable, Hong, Chiu, Dweck, & Sacks, 1997; $\alpha = .82$), intrinsic motivation (i.e., tendency to engage in tasks for their inherent value, Ryan & Deci, 2000), and self-efficacy (Bandura, 1982; $\alpha = .92$) to rule out alternative process accounts (see Appendix)⁵. Two control measures assessed effort, “The math test would be more (a) fun, (b) difficult (reverse coded) if I used...,” ($-3 = pencil \& paper, 3 = calculator; r = .45, p < .001$). Finally, a manipulation check assessed which product is more effective, “resulting in a higher test score” ($-3 = pencil \& paper, 3 = calculator$).

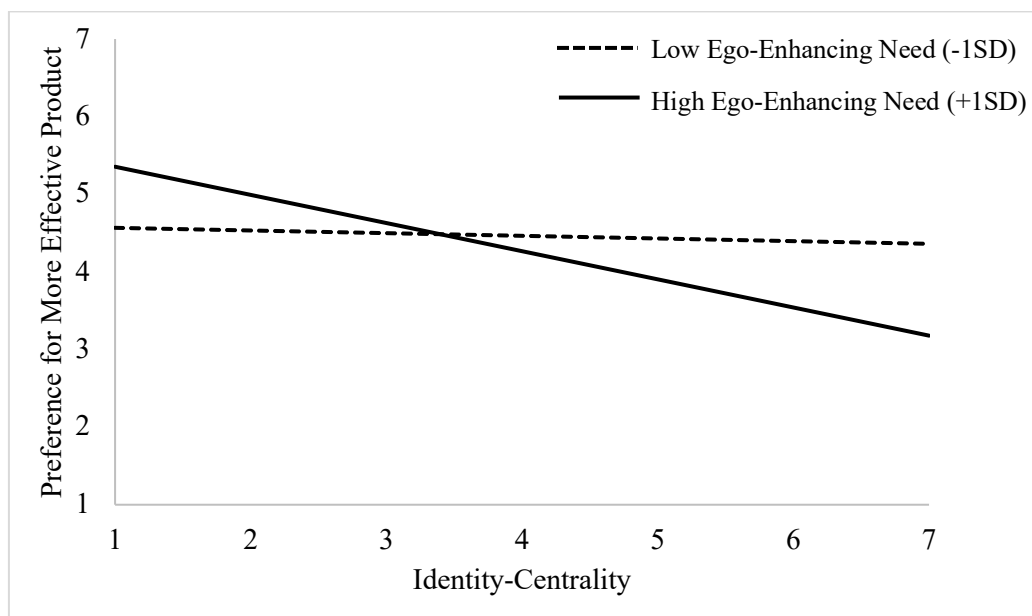
Results

Manipulation check. As we expected, students reported a calculator is more effective in ensuring a higher score on math tests than paper-pencil ($M = 1.37, SD = 1.97$ vs. $0 =$ both are equally effective; $t(129) = 7.94, p < .001$).

⁵Our view is none of these alternative accounts can make a clear, main effect prediction on reduced preference for effective products the way our identity-centrality proposition can, nor have such effects been reported previously leading us to believe these alternative accounts are unlikely. For example, one could hypothesize people low in self-esteem would choose better products to compensate for their inadequacies (Aronson & Mettee, 1968) or that they choose worse products to protect their fragile ego (Martin et al., 2003). Those high in self-esteem might choose worse products to challenge the self (Waschull & Kernis, 1996) or better ones to maximize success and reinforce their ego (Tice, 1991). People with external locus might choose worse products to blame the products for failure, as might people who believe abilities are fixed (Dweck & Leggett, 1988). But those with an internal locus might also choose less effective products to challenge themselves, as might those who believe ability can be improved. Still, in Study 7 we control for these alternative accounts.

Hypothesis testing. Students who considered math as central to their identity, and thus their choice could ego-enhance, preferred the calculator less for their test, but only when their need for internal-credit was high. Regression analyses predicting calculator preferences (measured time-1) from time-2 measures of identity-centrality, chronic need for internal-credit, and their interaction revealed a main effect of identity-centrality ($b = -0.23$, $SE = 0.07$, $t(126) = -3.18$, $p = .002$, $\eta^2 = .07$), and an interaction between identity-centrality and internal-crediting need ($b = -0.10$, $SE = 0.05$, $t(126) = -1.96$, $p = .053$, $\eta^2 = .03$; Figure 9). As we expected, when need for internal-credit was high (+1SD), the more central math was to identity, the less students preferred calculator ($b = -0.36$, $SE = 0.10$, $t(126) = -3.51$, $p = .001$). Also as expected, the effect of identity-centrality of math on preference was attenuated when need for internal-crediting was low (-1SD; $p = .28$)⁶.

Figure 9. Preference for a More (vs. Less) Effective Products as a Function Chronic Need for Ego-Enhancing Attributions and of Identity-Centrality



⁶ Similar results are observed when we instead predict time1 preferences from time1 identity-centrality, time-2 internal-credit need, and their interaction, and also when we consider choice rather than preference (see Appendix).

Supplementary analysis. Regression analyses predicting preference for the calculator (measured time-1) from time-2 measures of identity-centrality, chronic need for internal-credit, and their interaction, external blaming, an interaction between external blaming and identity-centrality, and all control items (self-esteem, attributions about others, implicit theories, locus of control, intrinsic motivation, and self-efficacy; all time-2), and math skill (time-1) revealed a main effect of identity-centrality ($b = -0.22$, $SE = .09$, $t(115) = -2.60$, $p = .01$, $\eta^2 = .05$), such that the more central to identity math the less students preferred the more effective calculator. The interaction between identity-centrality and internal-credit need was again significant ($b = -0.13$, $SE = 0.05$, $t(115) = -2.37$, $p = 0.02$, $\eta^2 = 0.04$), such that the negative effect of identity centrality on calculator preferences arose when credit-needs were high. Thus, the results of our initial analysis were replicated.

Additionally, this analysis showed a marginal effect of external-blame need ($b = 0.24$, $SE = .15$, $t(115) = 1.64$, $p = .10$, $\eta^2 = 0.02$), such that the greater the need to blame external factors for failure the greater the preferences for the calculator over the pencil and paper, which makes sense because it is nearly impossible to blame anything but oneself for doing math incorrectly by hand. The interaction between identity-centrality and external-blame need was also significant ($b = 0.12$, $SE = .06$, $t(115) = 2.11$, $p = 0.04$, $\eta^2 = 0.03$), such that the negative effect of identity centrality on preferences was attenuated when external blame needs were high.

Discussion

The results of Study 7 show that people shift preferences away from more, towards less, effective products when choices can serve an ego-enhancing need because they are in identity-central domains, and when their chronic need for ego-enhancing attributions is high. That we

found our effect in a study using observations taking place at a delay of six weeks shows the stability of our proposed effect and rules out the possibility of demand effects in eliciting these preferences. Moreover, we ruled out several alternative accounts, including self-efficacy, explicit and implicit self-esteem, locus of control, implicit theories, intrinsic motivation, and self-handicapping (the need for protecting the ego by blaming failure externally). Most importantly, Study 7 provides evidence of our proposed mediating factor—i.e., need for ego-enhancing attributions—through moderation. In Study 8, we triangulate on these findings by using a non-student sample, employing a different goal (organization rather than math), and manipulating identity-centrality (whether being an organized person is or is not central to identity). We also check for process evidence through mediation.

Study 8

Method

Four hundred and ten ($M_{age} = 35.98$, $SD = 11.27$; 43.9% female) Mechanical Turk (MTurk) workers were randomly assigned to one of four cells in a single factor (identity: central, non-central, salient, non-salient) between-subject design with preference for a target product feature as the dependent variable. We predict that situational prime of identity-centrality of a goal (getting organized), but not non-centrality of the goal or mere salience of identity per se, will increase need for internal-credit in that domain, and result in reduced preferences for more effective product features that facilitate goal performance. Based on pre-set exclusion criterion, we identified 24 participants across conditions who did not follow the prompt assigning them to condition (i.e., writing something other than prompted, disagreeing with the prompt, or typing

gibberish or nonsense; no effect of condition on not following the prompt), and we excluded the data of these participants from our analysis ($n = 386$).

Upon entering the survey, participants were instructed they would complete a writing task and then evaluate a product. For the writing task, participants were randomized into one of four conditions. In the [*non*] identity-central condition, participants wrote a few words about why being an organized person is [*not*] a central aspect of their identity and why being organized [*other things*] defines who they are as a person. In the [*non*] identity-salient condition, participants wrote [*the date and a description of the weather*] their first name and a few words about themselves (Shu et al., 2012).

We expect participants explicitly cued to think of a few reasons why organizing is central to who they are will be able to come up with supporting reasons, which would be enough to elicit the identity-centrality of organizing goals, a need for ego-enhancing attributions, and ultimately, preference for less effective organizational product. We also expect participants cued to think of a few reasons organizing is not-central to their identity will be able to come up with supporting reasons, and thus this condition would not elicit a need for ego-enhancing attributions in getting organized, and thus need for ego-enhancing attributions and preferences would be similar to those in the salient and non-salient conditions. Finally, we expected that writing about the weather would elicit responses devoid of any identity-relevance, and thus elicit no need for ego-enhancing attributions. Thus, we expect the non-identity-salient condition to differ from the identity-central condition (but not the non-identity-central or identity-salient conditions).

After completing the writing task, all participants saw a description of a fictitious product, Google One, a smart speaker technology allegedly being launched by Google. Under the

guise that Google is considering what product features to include, participants were asked for their preferences for a feature that would make the speaker a more effective tool for getting organized (i.e., it would proactively manage tasks; “To what extent would you like Google One proactively telling you what to do versus you telling Google One what to do”: 1 = *I tell Google One*, 7 = *Google One tells me*; higher values indicate preferences for a more effective product).

In contrast to Study 1 that assessed chronic need for ego-enhancing attributions, in this study participants then indicated domain-specific ego-enhancing need—“To what extent do you like feeling you deserve credit for being an organized person,” “To what extent do you enjoy crediting yourself for being an organized person,” “To what extent do you like to feel you are the one responsible for organizing all your activities,” and “To what extent do you want to be organized because doing so makes you gain control over your activities?” (1 = *Not at all*, 7 = *Extremely*; $\alpha = .77$). To control for an alternative account that participants have a desire to exert effort into getting organized, they also responded to, “To what extent do you like to expend effort on getting organized” (1 = *Not at all*, 7 = *Extremely*).

Participants then provided manipulation checks (all 1 = *Not at all*, 7 = *Extremely*) to confirm (a) Google One was seen as equally effective across all prime conditions (“How useful is Google One for organizing” and “How effective is Google One at organizing,” $r = .91$, $p < .001$), (b) identity-centrality of organizing varied by condition (“To what extent does being an organized person define who you are” and “How important is being an organized person to your identity,” $r = .91$, $p < .001$); and (c) identity-salience varied by condition (“When you completed the first writing task, to what extent did you think about yourself”). Finally, demographic measures (age, gender) were collected.

Results

Manipulation checks. As we expected: (a) being organized was more central to identity in the identity-centrality condition ($M = 5.51$) compared to all other conditions ($M = 4.39$; $t(376) = 5.91$, $p < .001$)⁷, and (b) identity was less salient in the non-salient condition ($M = 3.45$) compared to all other conditions ($M = 5.91$; $t(374) = -14.10$, $p < .001$). The conditions also did not systematically differ in perceived effectiveness of Google One for organizing, (all pairwise comparisons using Student's *t* correction, $ps > .30$).

Preferences for more effective product. We created three dummy variables to test our hypothesis. Specifically, regression analyses predicting preferences for a more effective Google One from dummy 1 (identity-central = 1 vs. all other conditions = 0), dummy 2 (non-identity-central = 1 vs. all other conditions = 0), and dummy 3 (non-identity-salient = 1 vs. all other conditions = 0) revealed only a main effect of dummy 1: Participants in the identity-central condition wanted the more effective product less ($M = 2.36$) than those in the other conditions ($M = 2.86$; $b = -0.25$, $SE = .11$, $t(373) = -2.32$, $p = .02$). The effect of dummy 2 and dummy 3 on preferences were, as expected, non-significant ($ps > .18$). Moreover, including effort desire in this model showed no effect of effort desire on preferences ($p = .96$).

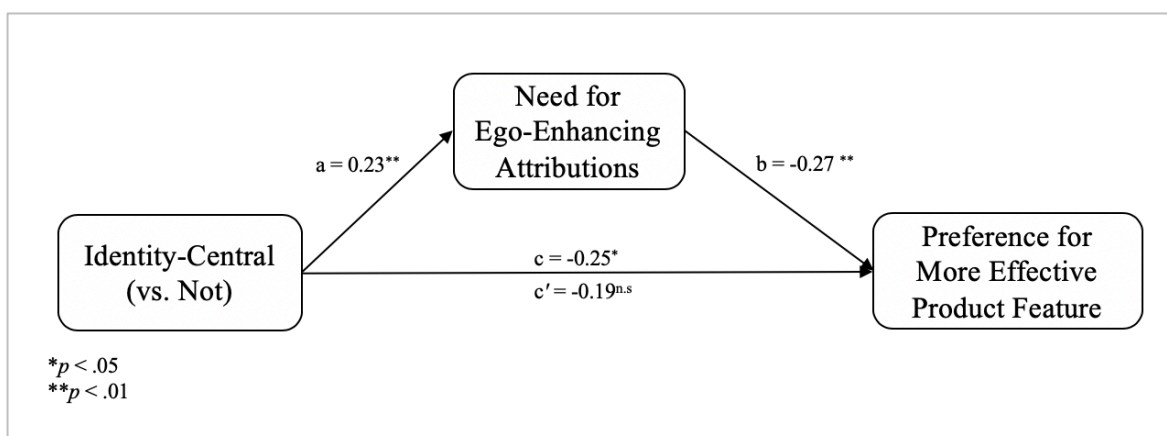
Need for ego-enhancing attributions. A regression of dummy 1 (identity-central = 1 vs. all other conditions = 0), dummy 2 (non-identity-central = 1 vs. all other conditions = 0), and dummy 3 (non-identity-salient = 1 vs. all other conditions = 0) revealed only a main effect of dummy 1 on internal-credit need: Participants in the identity-central condition needed more ego-enhancing attributions ($M = 5.63$) than those in the other conditions ($M = 5.17$; $b = 0.23$, $SE =$

⁷ Across our analyses, degrees of freedom deviate from what is expected from the sample size due to participants who did not respond to all measures.

.08, $t(378) = 2.98$, $p = .003$). The effect of dummy 2 and dummy 3 on ego-need were, as expected, non-significant ($ps > .17$).

Mediation analysis. We found identity-centrality reduced preferences for the more effective product, but increased need for ego-enhancing attributions for getting organized. A regression analysis also showed need for ego-enhancing reduced preferences for the more effective product ($b = -0.27$, $SE = .07$, $t(375) = -3.87$, $p < .001$). Moreover, the effect of identity-centrality (dummy 1) on reduced preferences was not significant when controlling for ego-enhancing need ($b = -0.19$, $SE = .11$, $t(372) = -1.77$, $p = .08$), while the effect of ego-enhancing need remained significant ($b = -0.26$, $SE = .07$, $t(372) = -3.64$, $p = .003$), and the effect of dummy 2 and dummy 3 remained non-significant in this model ($ps > .12$). Mediation was confirmed by bootstrapping (Preacher and Hayes 2008; Figure 10), 5,000 samples, 95% CI [-.11, -.02]. Thus, domain-specific ego-enhancing need fully mediated the relationship between primed identity-centrality and reduced preferences for the more effective product. Additional analyses including desire for exerting effort on getting organized as a covariate in the mediation model revealed no effect of effort desire on preferences ($p = .10$).

Figure 10. Identity-Centrality of the Task Domain Heightens Need for Ego-Enhancing Attributions and Reduces Preferences for More Effective Products



Discussion

Replicating Study 7, we find that when a domain is identity-central, people exhibit reduced preferences for more effective products that can facilitate performance. But going beyond chronic measures of centrality, Study 8 provides converging effects in a different domain (getting organized, rather than math, goals) and by cueing situational centrality of the domain. We also find that the need for ego-enhancing attributions is heightened when identity-centrality of a goal is cued, and this need underlies the reduced preferences for more effective products. This study thus provides important, additional evidence that ego-enhancing need is the mechanism underlying reduced preferences for more effective products. Our objective in Study 9 is to provide additional evidence for our theorizing using a third domain (financial performance). Also, rather than give people a choice between a more effective product or its less effective alternative (as in Study 7, calculator vs. only paper and pencil), or assess preferences for including a feature that would make a new product more effective (as in Study 8, Google One), in Study 9 we frame the exact same product (a financial investment tool) as being more or less effective on a between-subject basis. A final objective in Study 9 was to also garner converging process evidence: Rather than ensure chronic need for ego-enhancement underlies preferences (Study 7), or situational priming of identity-centrality heightens ego-enhancement needs, we tested whether people also proactively anticipate the ego-enhancing internal attributions of credit that a product will afford, which reduces preferences for effective products.

Study 9

Study 9 employed a 2 (product framing: less vs. more effective) \times continuous (identity-centrality) between-subjects design. Participants reviewed one of two advertisements for a fictitious investment tool called Google Vest, then indicated their intent to use the product and how ego-enhancing the product might be. We predicted that preferences for the less, over more, effective product will be higher among consumers who view financial decisions as identity-central because the less effective product affords more ego-enhancing attributions.

Method

Two hundred sixty eight MTurk workers (55.2% female; $M_{\text{age}} = 36.83$, $SD_{\text{age}} = 10.92$) completed this study—with an exclusion criterion that they were at least 25 years of age, as adults older than 25 would be more likely to hold long-term financial goals and make financial investments. Eleven did not meet these exclusion criteria, leaving $n = 257$ for our subsequent analyses.

In the cover story, we first asked participants to briefly describe their long-term financial goals and then to indicate identity-centrality of the financial domain (“To what extent would you say your long-term investment goals define who you are as a person?” 1 = *Not at all*, 7 = *Extremely*). Participants then were randomly assigned to see one of two ads for Google Vest—allegedly an algorithmic product automatically making millions of investment decisions (more effective) or one in which people select their individual portfolio from millions of investments (less effective). People indicated their willingness to use Google Vest (0 = *No*; 1 = *Yes*), preference strength (1 = *strongly prefer to not use*, 6 = *strongly prefer to use*), and interest in

getting Google Vest (1 = *Not at all*, 7 = *Extremely*; latter two items averaged into a preference index, $r = .81, p < .001$).

To test whether people think less (vs. more) effective products are more ego-enhancing, which increases their preferences for such products, participants indicated, “How self-affirmed would you feel using Google Vest?” (1 = *Not at all*, 7 = *Extremely*). To rule out the alternative that people seek greater control over their decisions, or they enjoy expending effort, participants indicated, “To what extent do you want control over your financial performance?” (1 = *Not at all*, 7 = *Extremely*) and “To what extent do you enjoy expending effort on financial investing?” (1 = *Not at all*, 7 = *Extremely*). Finally, we collected demographics (age, gender).

Results

Preferences. A regression predicting preference from product effectiveness (less = -1, more = 1), mean-centered identity-centrality ($M = 5.05, SD = 1.44$), and their interaction, and including control and effort enjoyment as co-variates, revealed a main effect of identity-centrality ($b = 0.15, SE = .07, t(251) = 2.09, p = .038, \eta^2 = .02$). The more central to identity people considered the financial domain, the more they expressed interest in Google Vest. A main effect of desire for control also emerged ($b = -0.23, SE = .09, t(251) = -2.58, p = .01, \eta^2 = .03$), which expectedly reduced interest in Google Vest, independent of its effectiveness. The predicted interaction between identity-centrality and product effectiveness was marginally significant ($b = -0.11, SE = .07, t(251) = -1.74, p = .082, \eta^2 = .01$); this result replicated and was significant when using peoples’ binary choice of whether or not they would use the product⁸. The

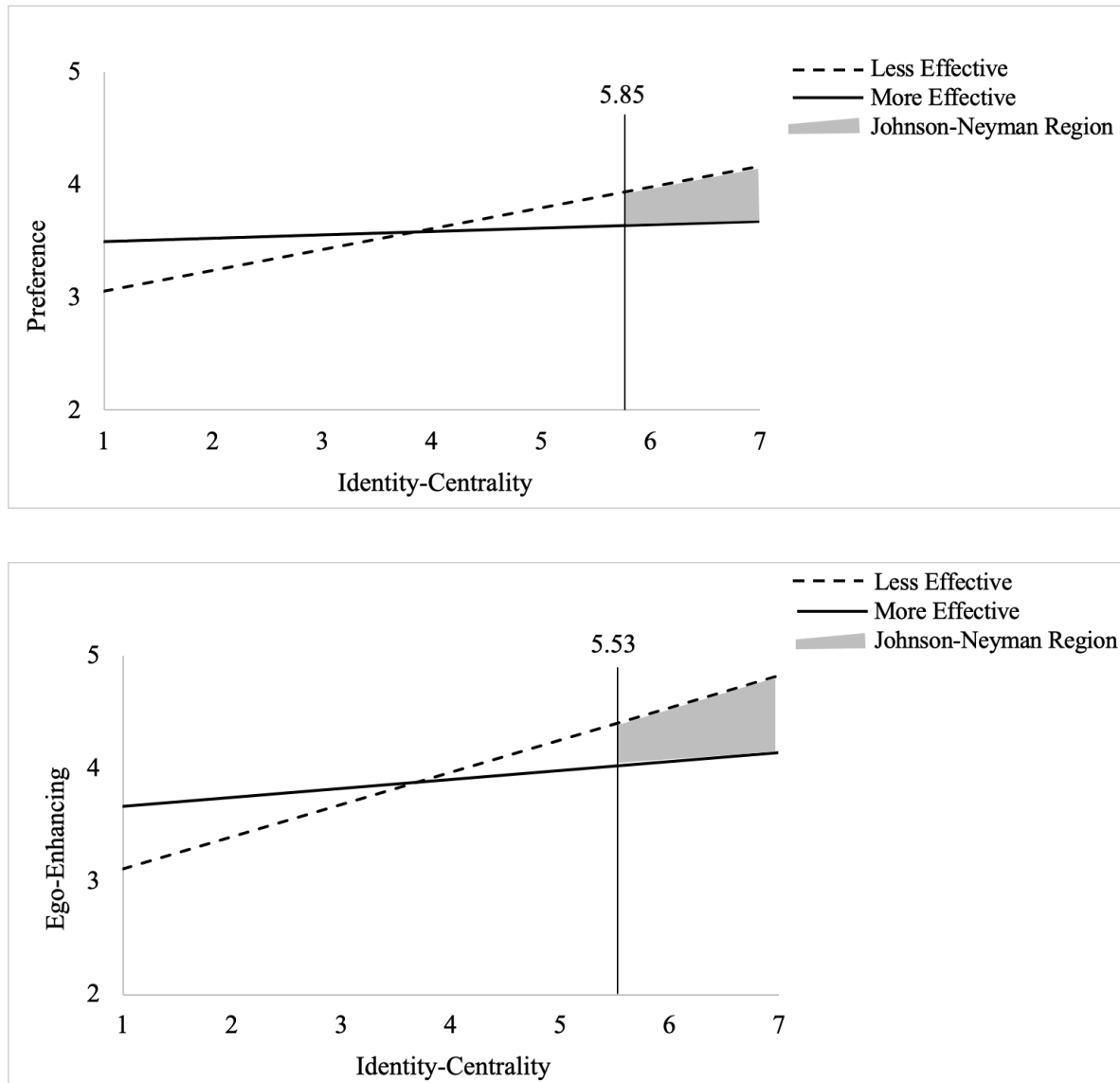
⁸ A regression predicting choice to use Google Vest (yes or no) from product effectiveness (less = -1, more = 1), mean-centered identity-centrality, and their interaction, including control-desire and effort-enjoyment as co-variates, revealed significant effects. A main effect of identity-centrality on choice emerged ($b = 0.20, SE = .10, Z(N = 257) = 2.00, p = .045$); people who consider the financial domain more central to identity also were more likely to use

Johnson-Neyman technique (Johnson & Neyman, 1936; Spiller et al., 2012) for identifying the $p < .05$ region where the moderating (identity-centrality) effect of the independent variable (product framing) on the dependent variable (preference) occurred at and above a value of 5.85, ($\beta_{JN} = -0.21$, $SE = .11$, which is 0.80 SD above the mean of identity-centrality; Figure 11, top panel).

Ego-Enhancing Attribution. A regression predicting ego-enhancing from product effectiveness (less = -1, more = 1), mean-centered identity-centrality, and their interaction, and including control and effort enjoyment as co-variates revealed a main effect of identity-centrality ($b = 0.19$, $SE = .07$, $t(250) = 2.57$, $p = .01$, $\eta^2 = .02$), such that people who indicated the financial domain is central to identity said they would feel the ego was more enhanced using Google Vest. The interaction between identity-centrality and effectiveness was also significant ($b = -0.13$, $SE = .07$, $t(250) = -1.97$, $p = .050$, $\eta^2 = .01$). The Johnson-Neyman for $p < .05$ for the identity-centrality moderator effect of product framing on preference occurred at and above a value of 5.53 ($\beta_{JN} = -0.21$, $SE = .10$, which is 0.48 SD above the mean of identity-centrality; Figure 11, bottom panel). Thus, people for whom the domain is highly identity-central report the ego is more enhanced through use of less (vs. more) effective Google Vest product.

Google Vest. Replicating the findings of our continuous measure of preferences, this main effect was qualified by a significant interaction ($b = -0.18$, $SE = .09$, $Z(N = 257) = -2.00$, $p = .046$). Floodlight analysis revealed a Johnson-Neyman region for $p < .05$ occurred > 5.59 ($\beta_{JN} = -0.28$, $SE = .14$, which is 0.54 SD above the mean of identity-centrality).

Figure 11. Product Preference for Google Vest (Top Panel) and Ego-Enhancing (Bottom Panel) Based on Product Framing (Less vs. More Effective) and Identity-Centrality



Moderated Mediation. Moderated mediation (Hayes, 2018, Model 7) showed effective products are preferred less because they are less ego-enhancing for people who consider the financial domain identity-central ($b = -0.09$, $SE = .05$, 95% CI [-0.20, -0.003]). Importantly, the effect was significant when identity-centrality was high (+1SD; $b = -0.24$, $SE = .11$, 95% CI [-

0.45, -0.04]), but not when identity-centrality was low (-1SD; $b = 0.04$, $SE = .09$, 95% CI [-0.11, 0.20]). Finally, the effect of product effectiveness \times identity-centrality on preference became non-significant when ego-enhancing was included as mediator ($b = -0.01$, $SE = .06$, $t(251) = -0.21$, $p = .84$). People preferred less over more effective products when the goals served by those products were identity-central, because such products afforded more ego-enhancing attributions.

Discussion

Taken together, Studies 7-9 show that (a) people chronically high in need for ego enhancement prefer effective products less when those products serve identity-central goals (Study 7), (b) situationally cueing identity-centrality of a domain increases need for ego-enhancement in that domain and reduces preferences for effective products (Study 8), and (c) less effective products are more ego-enhancing and people prefer them when the domain is identity-central (Study 9). The implication of these findings is that if people are reminded that the *act of choosing* more effective products also demonstrates competence and thus can enhance the ego, then this preference for less effective products may be attenuated. We test for this possibility in Study 10. Thus, half the participants did exactly what they did in Study 9—they saw the advertisement and then indicated interest in the product (replication). The remaining participants, before they indicated interest in the product, were reminded that choosing the best products to pursue goals with can demonstrate competence. This framing manipulation also helps us rule out the alternative account that people prefer less effective products when they focus on the process but more effective products when they focus on outcomes, because our instructions ensured all participants focus on the process.

Study 10

Method

Four hundred and one MTurk workers (50.9% female; $M_{\text{age}} = 36.31$, $SD_{\text{age}} = 12.80$) completed our survey. The study employed a 2 (product framing: more vs. less effective) \times 2 (ego-enhancement attribution: internal-crediting vs. choosing the best) \times continuous (identity-centrality) between-subjects design. No data exclusions were made.

As in Study 9, everyone was first asked to write about their long-term financial goals and then indicate the extent this domain is identity-central. Next as in Study 9, participants were assigned randomly to view one of the two Google Vest advertisements presenting the algorithmic tool as more versus less effective. Roughly half the participants were instructed prior to viewing the advertisement that making the best choices can indicate one's competence. Specifically, before reading the advertisement for Google Vest, participants received the instruction, "Keep in mind that the most competent people make the best choices" and then indicated their agreement with, "How much do you feel a person's choice reflects their competence?" (1= Not at all, 7 = Extremely; manipulation check). All participants then went on to indicate their interest in Google Vest and how ego-enhancing Google Vest is. Those participants who did not see and respond to the attribution manipulation then saw it, but only after indicating interest and responding to ego-enhancing measures. Finally, exactly as in Study 9, all participants indicated their extent of enjoyment from exerting effort and their desire to feel in control of the outcomes in the financial domain, and demographics (gender, age).

Results

Manipulation Check. As we expected, participants attributing ego-enhancement to choice indicated they could enhance their ego from choice ($M = 5.49$, $SD = 1.14$) more than those attributing it to internal-credit ($M = 5.25$, $SD = 1.21$; $t(399) = 2.62$, $p = .009$, $\eta^2 = .02$).

Hypothesis Testing. We ran regression analyses predicting interest in getting Google Vest from product effectiveness (less = -1, more = 1), attribution (internal-crediting = -1, choosing = 1), mean-centered identity-centrality, and all interactions. As in Study 9, we controlled for the effects of enjoyment from expending effort and desire for control⁹. A main effect of identity-centrality emerged, indicating people who considered the financial domain as more central were more willing to get Google Vest ($b = 0.19$, $SE = .07$, $t(385) = 2.80$, $p = .005$, $\eta^2 = .02$). However, we also observed a main effect of product effectiveness ($b = -0.26$, $SE = .09$, $t(385) = -2.89$, $p = .004$, $\eta^2 = .02$); our financially-involved participants generally preferred the more effective Google Vest less ($M = 3.79$ vs. $M = 4.32$), which is in line with our findings that people prefer effective products less when domains are identity-central. The main effects of desire for control of one's financial outcomes on reducing willingness to get Google Vest ($b = -0.22$, $SE = .08$, $t(385) = -2.65$, $p = .008$, $\eta^2 = .02$), of enjoyment from expending effort ($b = 0.21$, $SE = .07$, $t(385) = 3.12$, $p = .002$, $\eta^2 = .01$), and of males preferring Google Vest ($b = 0.19$, $SE = .09$, $t(385) = 2.14$, $p = .03$, $\eta^2 = .01$), were also significant.

Critical to our theorizing, the interaction between product effectiveness and identity-centrality was significant ($b = -0.11$, $SE = .06$, $t(385) = -1.97$, $p = .049$, $\eta^2 = .01$). People who

⁹ In this study, unlike our other studies where demographics did not play a role in impacting preferences, a main effect of gender emerged in predicting interest in getting Google Vest, such that men were more interested in getting this product than women ($b = -0.27$, $SE = .09$, $t(399) = -2.87$, $p = .004$). Thus, gender was also included as a covariate in our main analysis, though the results are nearly identical without this additional covariate.

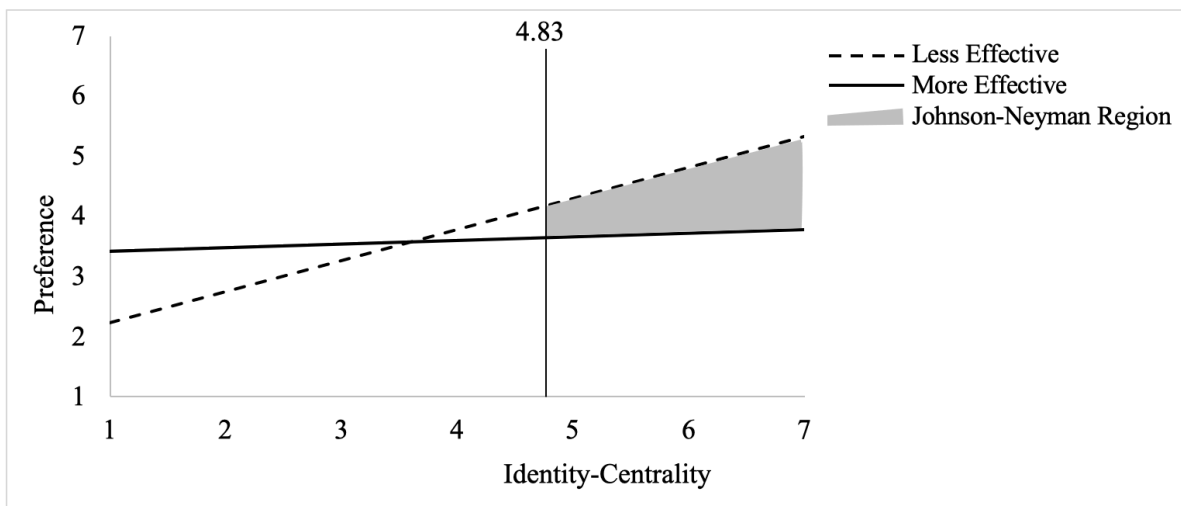
consider the financial domain as identity-central preferred the less to more effective product (+1SD; $M = 4.82$ vs. $M = 3.93$; $t(385) = -3.47$, $p < .001$). This difference did not emerge when identity-centrality of the financial domain was low (-1SD; $M = 3.86$ vs. $M = 3.69$; $t(385) = 0.63$, $p = .53$). A marginal three-way interaction between product effectiveness, the attribution manipulation, and identity-centrality also emerged ($b = 0.10$, $SE = .06$, $t(385) = 1.72$, $p = .086$, $\eta^2 = .01$).

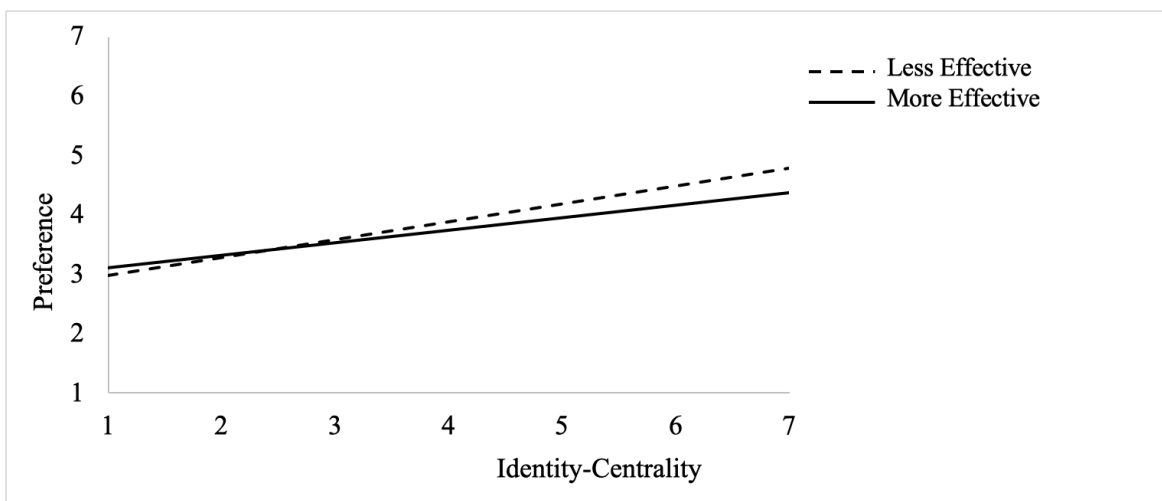
Decomposing this three-way interaction showed that people who consider the financial domain to be more identity-central prefer less to more effective products, but this difference is attenuated when ego-enhancing attributions are instead made by choosing the best product. Specifically, among participants who ego-enhanced through internal-credit, we found a replication of Study 9. Predicting product interest from product effectiveness, identity-centrality, and their interaction, with desire for control, enjoyment from effort, and gender as covariates revealed a significant two-way interaction ($b = -0.22$, $SE = .08$, $t(190) = -2.59$, $p = .01$, $\eta^2 = .03$). The main effects of product effectiveness ($b = -0.29$, $SE = .12$, $t(190) = -2.30$, $p = .02$, $\eta^2 = .02$); identity-centrality ($b = 0.21$, $SE = .09$, $t(190) = 2.32$, $p = .02$, $\eta^2 = .02$); enjoyment from effort ($b = 0.16$, $SE = .09$, $t(190) = 1.79$, $p = .076$, $\eta^2 = .01$); and gender ($b = -0.27$, $SE = .13$, $t(190) = -2.08$, $p = .038$, $\eta^2 = .02$) were also significant.

Furthermore, as we expected, the Johnson-Neyman region for $p < .05$ for the identity-centrality moderator occurred at and above a value of 4.83 ($\beta_{JN} = -0.26$, $SE = .13$, which is 0.18 SD above the mean of identity-centrality; Figure 12, top panel), implying people for whom the financial domain is central to identity preferred the less over the more effective Google Vest product. Repeating this analysis for participants who ego-enhanced through making the best

choice, we found main effects of desire for control ($b = -0.37$, $SE = .12$, $t(192) = -3.13$, $p = .002$, $\eta^2 = .04$), and enjoyment from effort ($b = 0.24$, $SE = .10$, $t(192) = -2.28$, $p = .024$, $\eta^2 = .02$), and marginal effects of product effectiveness ($b = -0.24$, $SE = .13$, $t(192) = -1.78$, $p = .077$, $\eta^2 = .01$), indicating somewhat increased preferences for the more effective product, and of identity-centrality ($b = 0.18$, $SE = .11$, $t(192) = 1.74$, $p = .084$, $\eta^2 = .01$). Importantly, the interaction was no longer significant ($p = .97$; Figure 12, bottom panel), confirming that attributing ego-enhancement to making the best choices attenuated preferences for the less effective product.

Figure 12. Preference for Google Vest as a Function of Product Framing (Less vs. More Effective), Identity-Centrality, and Ego-Enhancing Attributions from Internal-credit (Top Panel) versus from Choosing the Best (Bottom Panel)





Ego-Enhancing. We ran regression analyses predicting ego-enhancing from product effectiveness (less = -1, more = 1), attribution (internal-crediting = -1, choosing = 1), mean-centered identity-centrality, and all interactions, with enjoyment from effort, desire for control, and gender as covariates. We observed main effects of effectiveness ($b = -0.26$, $SE = .07$, $t(385) = -3.35$, $p < .001$, $\eta^2 = .03$), showing more effective products are less ego-enhancing; of identity-centrality ($b = 0.22$, $SE = .06$, $t(385) = 3.72$, $p < .001$, $\eta^2 = .03$), showing using Google Vest is more ego-enhancing when people consider the product as serving identity-central domains; of enjoyment from effort ($b = 0.17$, $SE = .06$, $t(385) = 2.85$, $p = .005$, $\eta^2 = .02$); and, of desire for control ($b = -0.16$, $SE = .07$, $t(385) = -2.15$, $p = .032$, $\eta^2 = .01$). The interaction between product effectiveness and identity-centrality was directional ($b = -0.08$, $SE = .05$, $t(385) = -1.56$, $p = .12$), and qualified by the three-way interaction between effectiveness, attribution, and identity-centrality ($b = 0.10$, $SE = .05$, $t(385) = 1.95$, $p = .052$, $\eta^2 = .01$).

Decomposing this three-way interaction into two two-way interactions, first for participants who attributed ego-enhancement to internal-credit (replicating Study 9), a significant

two-way interaction between product effectiveness and identity-centrality emerged ($b = -0.18$, $SE = .07$, $t(190) = -2.51$, $p = .013$, $\eta^2 = .03$). The main effects of product effectiveness ($b = -0.24$, $SE = .11$, $t(190) = -2.28$, $p = .024$, $\eta^2 = .02$); identity-centrality ($b = 0.23$, $SE = .07$, $t(190) = 3.06$, $p = .003$, $\eta^2 = .04$); and enjoyment from effort ($b = 0.17$, $SE = .07$, $t(190) = 2.26$, $p = .025$, $\eta^2 = .02$), were also significant. Furthermore, as we expected, the Johnson-Neyman region for $p < .05$ for the identity-centrality moderator occurred at and above 4.84 ($\beta_{JN} = -0.21$, $SE = .11$, which is 0.18 SD above the mean of identity-centrality). Thus people who consider the financial domain central to identity anticipated greater ego-enhancing through use of the less (vs. more) effective Google Vest product.

Next, for participants who attributed ego-enhancement to making the best choices, similarly conducted regression analyses revealed main effects of desire for control ($b = -0.25$, $SE = .11$, $t(192) = -2.28$, $p = .02$, $\eta^2 = .02$); product effectiveness ($b = -0.27$, $SE = .12$, $t(192) = -2.30$, $p = .02$, $\eta^2 = .02$); and identity-centrality ($b = 0.24$, $SE = .10$, $t(192) = 2.40$, $p = .02$, $\eta^2 = .03$). No other effects were significant ($ps > .13$). Thus, critical to our theorizing, once participants could enhance their ego by making the best choices, people for whom the financial domain was central to identity no longer preferred the less, to more, effective Google Vest product. They also did not feel less ego-enhancing from the less, versus more, effective product. Thus, less effective products still are seen as enhancing ego by virtue of affording internal-credit, even when an alternative source of enhancing the ego (e.g., making competent choices) is made salient. As a result, ego-enhancing afforded by choosing effective products can be heightened but ego-enhancing through use of less effective products is unlikely to be undermined.

Moderated Mediation. To test whether ego-enhancing underlies heightened preferences for less effective products among people who consider the financial domain identity-central, but only as long as ego-enhancing is not attributed to making the best choices, we conducted two separated moderated mediation analyses (Hayes, 2018, Model 7)—first amongst people who did not receive the attribution manipulation, and second, amongst people who did receive the attribution manipulation that ego-enhancing is possible through making the best choices. We expected the index of moderated mediation to be significant in the first, but not the second, regression. In the first regression, amongst those who did not receive the attribution manipulation (replicating Study 9), the index of moderated mediation was significant ($b = -0.15$, $SE = .07$, 95% CI [-0.29, -0.02]). Specifically, the region for $p < .05$ for the identity-central moderator occurred at and above 4.81 ($\beta_{JN} = -0.21$, $SE = .11$, which is -0.21 SD below the mean of identity-centrality). This indicates preferences for a less effective product exceeded those for the more effective product when the domain was identity-central. In addition, the effect of product effectiveness on preference became non-significant when ego-enhancing was included as mediator ($b = -0.09$, $SE = .09$, $t(192) = -0.99$, $p = .32$), indicating that the effect of product effectiveness on preferences is driven by enhancing ego through use of less effective products. Conversely, in the second regression, amongst those who received the manipulation that choice of the best products could enhance ego, the index of moderated mediation was not significant ($b = -0.03$, $SE = .07$, 95% CI [-0.11, 0.15]). Thus, when people can enhance ego through making the best choice, their preferences for less over more effective products are attenuated.

Discussion

This final study is important for several reasons. First, we replicated Study 9 and found that people prefer less (vs. more) effective products when those products serve identity-central domains. We further showed the reason for the reduction in preferences is that people expect their ego will be more enhanced when they use less effective products. These effects are not explained by an enjoyment of exerting more effort or of wanting to be in control. Second, critical to our theorizing, we found that focusing participants on how they can enhance their ego by making the best choices eliminates preference for less, over more, effective products. Thus, adding to findings of Studies 7-9, we showed preferences for more effective products can be heightened by affording ego-enhancing attributions to making the best choices. Interestingly, affording an ego-enhancing attribution to people through choice of more effective products did not undermine the ego-enhancing attributions derived through internal-credit from less effective products. Thus, people can enhance ego through various sources and enhancing ego via one source (choice) does not undermine enhancing ego from an alternative (use of less effective products) source.

General Discussion

That a bad workman blames his tools is a well-known idiom. Supporting this notion, Berglas and Jones (1978) found participants whose intelligence was threatened (vs. not) preferred to ingest what they believed to be a performance-*inhibiting* drug for a subsequent test 70% (vs. 13%) of the time. By “self-handicapping,” people could externalize potential failure (i.e., blame the drug/product for poor future performance), and protect their egos (Alter & Forgas, 2007; Martin et al., 2003). We proposed a novel, but related, theory—“a good workman

prefers less effective tools.” The reason for his perverse preference is that he seeks ego-enhancing attributions—i.e., to credit himself, rather than his tools—for a job well done.

Building on the idea that to maintain ego, people may be overly optimistic about success on goals they plan to undertake (Alicke, 1985; Taylor & Brown, 1998; Weinstein, 1980), especially those goals that are identity-central and thus serve the ego, we posited people will prefer less, in favor of more, effective products. More effective products could be perceived as taking credit for delivering on an outcome away from the person. That is, people see outcomes as arising from either external factors such as product effectiveness, or from internal factors such as their own competence. Using more effective products undermines the ego-enhancing attribution that internal, rather than external, factors can be credited for success. Therefore, when people wish to enhance the ego, because a domain is central to who they are, they reduce preferences for more effective products. We tested these propositions in four studies.

Study 7 showed the basic effect. Students—for whom math was central to identity—shifted preferences away from a more effective product towards a less effective alternative, especially students who had a high chronic need for ego-enhancing attributions. Testing our process mechanism further, Study 8 additionally showed situationally increasing identity-centrality of a domain heightened need for ego-enhancing attributions and in turn undermined preferences for more effective products. Study 9 showed directly that people considered the same product when it was framed as more effective to be less ego enhancing and therefore preferred the product less when the goal it served was identity-central. Finally, Study 10 further implicated ego-enhancement as the mechanism underlying these reduced preferences by showing that allowing people to instead enhance their ego by making the best choice shifted their preferences

away from less effective products. We observed these effects using different measures of ego-enhancement—chronic, situationally boosted, perceived from product use, and moderated—across different studies. We also observed these effects across three different domains and three different populations—student and math performance (Study 7), the broader population and getting organized (Study 8), and financially involved people and investment tools (Studies 9-10). We observed these effects by measuring how chronically identity-central a goal was to the participant (Studies 7, 9 and 10) and by situationally boosting perceived centrality of the goal (Study 8). And we observed the effect of ego-enhancement needs in reducing preferences for more effective products through moderation (Studies 7 and 10). We also observed the role ego-enhancement plays through mediation—showing the reason people prefer less effective products when a goal is identity-central is because they experience greater ego-enhancement needs in such domains (Study 8) and they consider better products to be less ego enhancing (Study 9). Thus, we provided robust converging evidence supporting our theorizing.

This research is important for several reasons. First, it illuminates a decision bias people exhibit when selecting products. Past research had shown when people expect failure, they choose less effective products so they can blame the products for the failure (Alter & Forgas, 2007; Berglas & Jones, 1978; Martin et al., 2003). Our research suggests when domains are central to identity and therefore tied to ego maintenance, people desire ego-enhancing attributions, such as crediting themselves for success. More effective products are seen as taking this credit away from them, which in turn reduces preferences for those more effective products. This theorizing thus advanced past research showing that people tend to be optimistic about success on impending goals as an ego maintenance strategy (Metcalfe, 1998; Sharot, 2011). In

the future, researchers may wish to investigate whether this bias is corrected when people are alerted to the possibility of failure on an identity-central goal. Regardless, we show people prefer less effective products for impending goals that are central to identity, and thus, for a first time, that effective products take away ego-enhancing attributions of credit from people.

This research also adds theoretically to the attribution literature that had shown people tend to make either internal or external attributions for success or failure on outcomes, and they generally assume their dispositional factors brought about success, but situational factors brought about failures. We extended this reasoning to show that in order to credit dispositional factors for success people selectively avoid effective products, which could undermine such internal attributions of credit, for identity-central goals. Furthermore, the attribution literature had primarily focused on past outcomes, but our research showed that people also proactively manage their choices for the attributions they can later make. Thus, we are the first to show that ego-enhancing attributions are not only considered for outcomes that have occurred, but people systematically alter their choices so they can more readily make such attributions in the future. Future research should further distinguish between proactive management of attributions for ego-enhancement and retrospective management of these and other attributions.

That such effects arise in domains central to identity is also important, because domains people consider as central to identity may be the ones that people consider to also be the most important for achieving success in. If people demonstrate a systematic devaluation of effective products in such domains, then they may end up either being less successful on these goals, taking longer to reach goal objectives, or expending excessive effort to accomplish goals. Each of these eventualities can undermine ego because failures could threaten the identity (e.g., “If I

failed at this goal, is it truly part of who I am?”). Needing to invest excessive time or effort to accomplish identity-central goals may also become demotivating or result in self-questioning (e.g., questioning one’s skill, commitment, and/or expertise). Moreover, devaluing more effective products on identity-central goals may reduce overall productivity, leaving less time for the other goals one must accomplish. These important outcomes are deserving of additional attention from future researchers.

The present research also has important practical and societal implications. For example, a recent article suggests even doctors fall victim to such effects—i.e., rejecting medical instruments that will facilitate diagnosis to instead rely on their instincts (Siddiqui, 2018). Doctors may consider diagnosis of their patients as highly identity-central, and tools that facilitate this outcome may obstruct their need for ego-enhancing attributions. Thus, this research has implications well beyond the academic, organizational, and financial domains that we showed.

REFERENCES

- Abraham, H., Reimer, B., Seppelt, B., Fitzgerald, C., Mehler, B., & Coughlin J. F. (2017).
 Consumer interest in automation: Preliminary observations exploring a year's change.
MIT White Paper. Cambridge, MA.
- Alicke, M. D. (1985). Global self-evaluation as determined by the desirability and controllability
 of trait adjectives. *Journal of Personality and Social Psychology*, *49*(6), 1621–1630.
- Alicke, M. D., & Sedikides, C. (2009). Self-enhancement and self-protection: What they are and
 what they do. *European Review of Social Psychology*, *20*(1), 1–48.
- Allport, G. W. (1937). *Personality: A psychological interpretation*. Oxford, England: Holt.
- Alter, A. L. & Forgas, J. P. (2007). On being happy but fearing failure: The effects of mood on
 self-handicapping strategies. *Journal of Experimental Social Psychology*, *43*(6), 947–954.
- André, Q., Carmon, Z., Wertenbroch, K., Crum, A., Frank, D., Goldstein, W., Huber, J., van
 Boven, L., Weber, B., & Yang, H. (2018). Consumer choice and autonomy in the age of
 artificial intelligence and big data. *Customer Needs and Solutions*, *5*(1-2), 28–37.
- Aronson, E., & Mettee, D. R. (1968). Dishonest behavior as a function of differential levels of
 induced self-esteem. *Journal of Personality and Social Psychology*, *9*(2, Pt.1), 121–127.
- Bandura, A. (1982). Self-Efficacy Mechanism in Human Agency. *American Psychologist*, *37*(2),
 122–147.
- Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American
 Psychologist*, *54*(7), 462–479.
- Bélanger, J. J., Schumpe, B. M., Lafrenière, M. A. K., Giacomantonio, M., Brizi, A., &
 Kruglanski, A. W. (2016). Beyond goal commitment: How expectancy shapes means

- evaluation. *Motivation Science*, 2(2), 67–84.
- Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research*, 15(2), 139–168.
- Berglas, S. & Jones, E. E. (1978). Drug choice as a self-handicapping strategy in response to noncontingent success. *Journal of Personality and Social Psychology*, 36(4), 405–417.
- Brendl, C. M., Markman, A. B., & Messner C. (2003). The devaluation effect: Activating a need devalues unrelated objects. *Journal of Consumer Research*, 29(4), 463–473.
- Brown, J. D. (1986). Evaluations of self and others: Self-enhancement biases in social judgments. *Social cognition*, 4(4), 353–376.
- Cantor, N., Markus, H. R., Niedenthal, P., & Nurius P. (1986). On motivation and the self-concept. In R. M. Sorrention and E. T. Higgins, *Handbook of Motivation and Cognition: Foundations of Social Behavior*. NY: Guilford Press, 96–121.
- Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin*, 92(1), 111–135.
- Dunning, D., Meyerowitz, J. A., & Holzberg, A. D. (1989). Ambiguity and self-evaluation: The role of idiosyncratic trait definitions in self-serving assessments of ability. *Journal of Personality and Social Psychology*, 57, 1082–1090.
- Dweck, C. S. & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256–273.
- Farmer, C., Farrand, P. & Mahen H. O. (2012). ‘I am not a depressed person’: How identity conflict affects help-seeking rates for major depressive disorder. *BioMed Central Psychiatry*, 12(164).

- Ferguson, M. J. & Bargh, J. A. (2004). Liking is for doing: The effects of goal pursuit on automatic evaluation. *Journal of Personality and Social Psychology*, 87(5), 557–572.
- Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not into temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology*, 84(2), 296–309.
- Fishbach, A., & Labroo, A. A. (2007). Be better or be merry: How mood effects self-control. *Journal of Personality and Social Psychology*, 93(2), 158–173.
- Fishbach, A., Zhang, Y., & Trope, Y. (2010). Counteractive evaluation: Asymmetric shifts in the implicit value of conflicting motivations. *Journal of Experimental Social Psychology*, 46(1), 29–38.
- Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology*, 84(1), 148–164.
- Fitzsimons, G. M. & Shah, J. Y. (2008). How goal instrumentality shapes relationship evaluations. *Journal of Personality and Social Psychology*, 95(2), 319–337.
- Förster, J., Liberman, N., & Friedman, R. S. (2007). Seven principles of goal activation: A systematic approach to distinguishing goal priming from priming of non-goal constructs. *Personality and Social Psychology Review*, 11(3), 211–233.
- Gao, L., Wheeler, S. C., & Shiv B. (2009). The ‘shaken self’: Product choices as a means of restoring self-view confidence. *Journal of Consumer Research*, 36(1), 29–38.
- Gebauer, J. E., Riketta, M., Broemer, P. & Maio, G. R. (2008). ‘How much do you like your name?’ An implicit measure of global self-esteem. *Journal of Experimental Social Psychology*

- Psychology*, 44(5), 1346–1354.
- Gilbert, D. T., & Malone, P. S. (1995). The correspondence bias. *Psychological Bulletin*, 117(1), 21–38.
- Gollwitzer, P. M. (1986). Striving for specific identities: The social reality of self-symbolizing. In *Public Self and Private Self* (p. 143–59). Springer: New York, NY.
- Greenwald, A. G. (1980). The totalitarian ego. *American Psychologist*, 35(7), 603–618.
- Harris, R. N., & Snyder, C. R. (1986). The role of uncertain self-esteem in self-handicapping. *Journal of Personality and Social Psychology*, 51(2), 451–458.
- Hastie, R. (1984). Causes and effects of causal attribution. *Journal of Personality and Social Psychology*, 46(1), 44–56.
- Hastorf, A., Schneider, D., & Polefka, J. (1970). *Person perception*. Reading, MA: Addison-Wesley.
- Hayes, A. F., (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication Monographs*, 85(1), 4–40.
- Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, 41(3), 924–936.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Higgins, R. L., & Harris, R. N. (1988). Strategic “alcohol” use: Drinking to self-handicap. *Journal of Social and Clinical Psychology*, 6(2), 191–202.
- Higgins, R. L., Snyder, C. R., & Berglas, S. (1990). *Self-handicapping: The paradox that isn't*. New York, NY: Springer Science & Business Media.

- Hong, Y., Chiu, C., Dweck, C. S., & Sacks, R. (1997). Implicit theories and evaluative processes in person cognition. *Journal of Experimental Social Psychology, 33*(3), 296–323.
- Hull, Clark L. (1943), *Principles of Behavior: An Introduction to Behavior Theory*, New York: Appleton-Century.
- James, William (1890), *The Principles of Psychology*, Vol. 1, New York, NY: Holt.
- Johnson, P. O., & Neyman, J. (1936). Tests of certain linear hypotheses and their application to some educational problems. *Statistical Research Memoirs, 1*, 57–93.
- Jones, E. E., & Berglas, S. (1978). Control of attributions about the self through self-handicapping strategies: The appeal of alcohol and the role of underachievement. *Personality and Social Psychology Bulletin, 4*(2), 200–206.
- Kelley, H. H. (1967). Attribution theory in social psychology. In D. Levine (Ed.) *Nebraska symposium on Motivation*, Lincoln, NB: University of Nebraska Press.
- Kelley, H. H. (1973). The process of causal attribution. *American Psychologist, 28*(2), 107–128.
- Kopetz, C. E., Kruglanski, A. W., Arens, Z. G., Etkin, J. & Johnson, H. M. (2012). The dynamics of consumer behavior: A goal systemic perspective. *Journal of Consumer Psychology, 22*(2), 208–223.
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology, 77*(6), 1121–1134.
- Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y. & Sleeth-Keppler, D. (2002). A theory of goal systems. *Advances in Experimental Social Psychology, 34*, 331–378.

- Labroo, A. A. & Kim, S. (2009). The 'instrumentality' heuristic: Why metacognitive difficulty is desirable during goal pursuit. *Psychological Science*, 20(1), 127–134.
- Labroo, A. A. & Lee, A. Y. (2006). Between two brands: A goal fluency account of brand evaluation. *Journal of Marketing Research*, 43(3), 374–385.
- Lewin, K. (1935), *A Dynamic Theory of Personality*, New York, NY: McGraw-Hill.
- Malle, B. F. (1999). How people explain behavior: A new theoretical framework. *Personality and Social Psychology Review*, 3(1), 23–48.
- Markman, A. B. & Brendl, C. M. (2000). The influence of goals on value and choice. *The Psychology of Learning and Motivation*, 39, 97–128.
- Markman, A. B. & Brendl, C. M. (2005). Goals, policies, preferences, and actions. In F. R. Kardes, P. M. Herr, and J. Nantel (Eds.), *Applying Social Cognition to Consumer-Focused Strategy* (pp. 183-200), Hillsdale, NJ: Erlbaum.
- Markman, A. B., Brendl, C. M., & Kim, K. (2007). Preference and the specificity of goals. *Emotion*, 7(3), 680–684.
- Markus, H. R. (1983). Self-knowledge: An expanded view. *Journal of Personality*, 51(3), 543–565.
- Markus, H. R., & Nurius, P. (1986). Possible selves. *American psychologist*, 41(9), 954–69.
- Markus, H.R., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology*, 38, 299–337.
- Martin, A. J., Marsh, H. W., & Debus, R. L. (2003). Self-handicapping and defensive pessimism: A model of self-protection from a longitudinal perspective. *Contemporary Educational Psychology*, 28(1), 1–36.

- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–96.
- Metcalfe, J. (1998). Cognitive optimism: Self-deception or memory-based processing heuristics? *Personality and Social Psychology Review*, 2(2), 100–110.
- Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin*, 82(2), 213–25.
- Nisbett, R. E., & Kanouse, D. E. (1969). Obesity, food deprivation, and supermarket shopping behavior. *Journal of Personality and Social Psychology*, 12(4), 289–294.
- Orehek, E. & Forest, A. L. (2016). When people serve as means to goals: implications of a motivational account of close relationships. *Current Directions in Psychological Science*, 25(2), 79–84.
- Passer, M. W., Kelley, H. H., & Michela, J. L. (1978). Multidimensional scaling of the causes for negative interpersonal behavior. *Journal of Personality and Social Psychology*, 36(9), 951–962.
- Peak, H. (1955). Attitude and motivation. In M. R. Jones (Eds.), *Nebraska Symposium on Motivation*, Lincoln, NE: University of Nebraska Press, 149–189.
- Preacher, K. J. & Hayes, A. F. (2008). Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models. *Behavior Research Methods*, 40(3), 879–91.
- Rhodewalt, F., Saltzman, A. T., & Wittmer, J. (1984). Self-handicapping among competitive athletes: The role of practice in self-esteem protection. *Basic and Applied Social Psychology*, 5(3), 197–209.
- Roese, N., & Olson, J. (2007). Better, Stronger, Faster: Self-Serving Judgment, Affect

- Regulation, and the Optimal Vigilance Hypothesis. *Perspectives on Psychological Science*, 2(2), 124–141.
- Rosenberg, M. J. (1956). Cognitive structure and attitudinal affect. *The Journal of Abnormal and Social Psychology*, 53(3), 367–372.
- Rosenberg, M. J. (1965). *Society and the Adolescent Self-Image*, Princeton, NJ: Princeton University Press.
- Ross, L., & Nisbett, R. E. (1991). The power of the situation. In *The Person and the Situation: Perspectives of Social Psychology*, New York, NY: McGraw-Hill, 27–58.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1–28.
- Rucker, D. D., & Galinsky, A. D. (2008). Desire to acquire: Powerlessness and compensatory consumption. *Journal of Consumer Research*, 35(2), 257–267.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, 55(1), 68–78.
- Sapp, S. G., & Harrod, W. J. (1993). Reliability and validity of a brief version of levenson's locus of control scale. *Psychological Reports*, 72(2), 539–550.
- Sedikides, C., & Gregg, A. P. (2008). Self-Enhancement: Food for thought. *Perspectives on Psychological Science*, 3(2), 102–116.
- Shah, J. Y., Friedman, R., & Kruglanski, A. W. (2002). Forgetting all else: On the antecedents and consequences of goal shielding. *Journal of Personality and Social Psychology*, 83(6), 1261–1280.
- Sharot, T. (2011). The optimism bias. *Current Biology*, 21(23), R941–R945.

- Shu, L. L., Mazar, N., Francesca, G., Ariely, D., & Bazerman, M. H. (2012). Signing at the beginning makes ethics salient and decreases dishonest self-reports in comparison to signing at the end. *Proceedings of the National Academy of Sciences*, *109*(38), 15197–15200.
- Siddiqui, G (2018). Why doctors reject tools that make their lives easier. *Scientific American*, <https://blogs.scientificamerican.com/observations/why-doctors-reject-tools-that-make-their-jobs-easier/>
- Smith, T., Snyder, C., & Handelsman, M. (1982). On the self-serving function of an academic wooden leg: Test anxiety as a self-handicapping strategy. *Journal of Personality and Social Psychology*, *42*(2), 314–321.
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, *22*(11), 1359–1366.
- Spiller, S. A., Fitzsimons, G. J., Lynch Jr, J. G., & McClelland, G. H. (2013). Spotlights, floodlights, and the magic number zero: Simple effects tests in moderated regression. *Journal of Marketing Research*, *50*(2), 277–288.
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. *Advances in Experimental Social Psychology*, *21*, 261–302.
- Strube, M. (1986). An analysis of the self-handicapping scale. *Basic and Applied Social Psychology*, *7*(3), 211–224.
- Svenson O. (1981). Are we all less risky and more skillful than our fellow drivers? *Acta Psychologica*, *47*(2), 143–148.

- Taylor, S. E., & Brown, J. D., (1988). Illusion and well-being: a social psychological perspective on mental health. *Psychological Bulletin*, *103*(2), 193–210.
- Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. *Advances in Experimental Social Psychology*, *21*, 181–227.
- Tice, D. M. (1991). Esteem protection or enhancement? Self-handicapping motives and attributions differ by trait self-esteem. *Journal of Personality and Social Psychology*, *60*(5), 711–725.
- Tucker, J., Vuchinich, R., & Sobell, M. (1981). Alcohol consumption as a self-handicapping strategy. *Journal of Abnormal Psychology*, *90*(3), 220–230.
- Van Osselaer, S., Ramanathan, S., Campbell, M. C., Cohen, J. B., Dale, J., Janiszewski, C., Kruglanski, A. W., Lee, A. Y., Read, S. J., Russo, J. & Tavassoli, N. T. (2005). Choice based on goals. *Marketing Letters*, *16*(3–4), 335–346.
- Wänke, M., Bohner, G., & Jurkowitsch, A. (1997). There are many reasons to drive a BMW: Does imagined ease of argument generation influence attitudes? *Journal of Consumer Research*, *24*(2), 170–178.
- Waschull, S. B. & Kernis, M. P. (1996). Level and stability of self-esteem as predictors of children's intrinsic motivation and reasons for anger. *Personality and Social Psychology Bulletin*, *22*(1), 4–13.
- Weidner, G. (1980). Self-handicapping following learned helplessness treatment and the type A coronary-prone behavior pattern. *Journal of Psychosomatic Research*, *24*(6), 319–325.
- Weiner, B. (1972). *Theories of motivation: From mechanism to cognition*. Oxford, England: Markham.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion.

Psychological Review, 92(4), 548–573.

Weiner, B. (2018). The legacy of an attribution approach to motivation and emotion: A no-crisis

zone. *Motivation Science*, 4(1), 4–14.

Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality*

and Social Psychology, 39(5), 806–820.

Zhang, Y., Fishbach, A., & Kruglanski, A. W. (2007). The dilution model: How additional goals

undermine the perceived effectiveness of a shared path. *Journal of Personality and Social*

Psychology, 92(3), 389–401.

APPENDICES

Study 1 Pretest

Participants, 97 adult MTurk workers ($M_{\text{age}} = 35.01$, $SD = 9.12$; 36.7% female), were first instructed, “Think for a moment about the most successful male and female entrepreneurs. These entrepreneurs have started companies like Starbucks, Ben & Jerry's, Wikipedia, AOL, Tom's of Maine, and many more. This survey will ask you questions about what types of things you think these successful entrepreneurs rely on when building their companies.” Next, participants were again instructed, “What types of things do you think these successful entrepreneurs rely on when building their companies?” followed by seven unique questions including “To what extent do successful entrepreneurs rely on (1) their own skill, (2) their own intelligence, (3) their own hard work, (4) their team, (5) the support of friends and family, (6) being in the right place at the right time, (7) getting introduced to the right people?” (all 1 = *Not at all*, 7 = *Extremely*). The first three items were averaged into an index of internal-credit ($\alpha = .87$) and the later four items were averaged into an index of instrumentality ($\alpha = .70$). An attention check confirmed, “In this survey, who did you answer questions about?” (1 = *Successful entrepreneurs*, 2 = *The Average American worker*, 3 = *Failed lawyers*). Finally, participants provided their age and gender and an open ended thought listing item.

Study 2

Financial Domain

Instructions. “Think for a moment about your own long-term financial goals. There are different types of bank accounts you can use to facilitate your goals. For example, you can use a checking account or a savings account. Think about your long-term financial goals while responding to the following questions.”

Heightened Instrumentality Manipulation. “Please list two reasons a savings account is helpful for reaching your long-term financial goals.”

Instrumentality measures. “To what extent do you feel a savings account is helpful for long-term financial goals?” and “To what extent does a savings account make reaching your long-term financial goals more likely?”

Internal-credit measures. “To what extent do you feel a savings account secures your long-term financial goals for you?” and “To what extent can it be said a savings account brings about your long-term financial goals for you?” (both reverse coded)

Academic Domain

Instructions. “Think for a moment about your own intellectual goals for solving everyday, real-world math problems. There are different types of "tools" you can use to solve math problems. For example, you could use a calculator or you could use just a pencil & paper. Think about your own goals related to solving math problems while responding to the following questions.”

Heightened Instrumentality Manipulation. “Please list two reasons pencil & paper is helpful for solving math problems correctly.”

Instrumentality measures. “To what extent do you feel using a pencil & paper is helpful for solving math problems correctly?” and “To what extent does using a pencil & paper make it more likely you will solve math problems correctly?”

Internal-credit measures. “To what extent do you feel a pencil & paper does math for you?” and “To what extent can it be said a pencil & paper solves math problems for you?” (both reverse coded)

Study 3 Pretest

Method

Participants were asked to think about their long-term financial goals and two different means—savings and checking accounts—before evaluating each of these means for instrumentality and internal-credit. Fifty adults ($M_{\text{age}} = 30.6$, $SD_{\text{age}} = 9.1$; 32.0% female) recruited from Mechanical Turk participated in this entirely within-subjects 2 (means: savings vs. checking account) \times 2 (evaluation: instrumentality vs. internal-credit) study for compensation.

After consenting to the study, participants were instructed to think about their long-term financial goals. They were then asked to consider different types means—i.e., checking accounts and savings accounts—they can use to facilitate their long-term financial goals. Participants were further instructed that checking and savings accounts may differ in how much they facilitate long-term financial goals. Also, depending on which account they chose, they may feel more or less personally responsible for long-term financial goal attainment. All participants then responded to four measures of instrumentality: “To what extent do you feel a checking [savings] account would facilitate your long-term financial goals?” and “To what extent do feel a checking

[savings] account would help you make progress towards your long-term financial goals?” presented in random order (each 1 = *Not at all*, 7 = *Extremely*). Responses to the two items about each account type were averaged into an index of checking account instrumentality ($r = .84, p < .001$) and savings account instrumentality ($r = .74, p < .001$). All participants also responded to four key measures of internal-credit: “To what extent do you feel you are responsible for managing the money in your checking [savings] account?” and “To what extent do you feel a checking [savings] account manages your money for you?” (reverse coded), presented in random order (each 1 = *Not at all*, 7 = *Extremely*). This set of questions was counterbalanced with the instrumentality questions. To our surprise, no significant correlation between the internal-credit items was observed for either account type ($ps > .79$), thus the items were examined individually in subsequent analysis. In retrospect, it is possible the former question more clearly highlighted taking personal credit for managing ones’ finances, but the latter was more ambiguous in this regard. Overall, all aspects of the pretest survey were kept direct—making participants explicitly consider financial goals, two specific means that could serve these goals, and then evaluate the instrumentality and internal-credit afforded by these means.

Results

A 2 (account: savings vs. checking) \times 2 (evaluation: instrumentality vs. internal-credit) repeated-measures analysis revealed a main effect of account ($F(1, 49) = 24.58, p < .001$) such that checking accounts ($M = 5.19, SD = 1.81$) received lower overall evaluations than savings accounts ($M = 5.94, SD = 1.12$), which makes sense given the context of long-term financial goals. In addition, the analysis revealed a main effect of evaluation type ($F(1, 49) = 43.58, p < .001$) such that the instrumentality of all accounts ($M = 4.96, SD = 1.58$) was lower than the

overall internal-credit of all accounts ($M = 6.17, SD = 1.25$), which makes sense given both account types are (a) primarily managed by the individual consumer and (b) both savings and checking accounts are less instrumental for long-term financial goals than accounts specifically tailored to this purpose (e.g., an individual retirement account). Critically, we observed the expected interaction ($F(1, 49) = 60.12, p < .001$). The checking account ($M = 4.03, SD = 1.56$) was less instrumental to long-term financial goals than the savings account ($M = 5.88, SD = 0.93; t(49) = 7.63, p < .001$). Conversely, the checking account ($M = 6.34, SD = 1.21$) afforded greater internal-credit than the savings account ($M = 6.00, SD = 1.28; t(49) = -2.05, p = .046$). Analysis using the second internal-credit measure (the degree an account is perceived to manage money for the consumer, reverse coded) also revealed that a checking ($M = 3.72, SD = 1.77$) versus a savings account ($M = 3.26, SD = 1.71$) afforded greater internal-credit ($t(49) = -1.88, p = .065$).

Study 4 Pretest

Method

Forty-five university students ($M_{\text{age}} = 27.2, SD_{\text{age}} = 7.2$; 42.2% female) were recruited to complete a 2 (means: calculator vs. pencil-paper) \times 2 (evaluation: instrumentality vs. internal-credit) within-subjects design.

Students who consented to participate were instructed to think about their immediate academic goals—in particular, doing well in a math course. Students were reminded of the different “tools”—i.e., a calculator or pencil-paper—they can use to facilitate this goal. Students were also instructed they may feel differently about how much such tools help them to do well; and, depending on which tools are used, they may feel like they can take more or less personal credit for goal attainment. Students then responded to our key measures of instrumentality: “To

what extent do you feel using a calculator [pencil and paper] facilitates solving math problems?” and “To what extent do feel using a calculator [pencil and paper] makes is more likely you will solve math problems correctly?” presented in random order (each 1 = *Not at all*, 7 = *Extremely*). Responses to the two items about each means were averaged into a single index of calculator instrumentality ($r = .38, p = .011$) and paper-pencil instrumentality ($r = .73, p < .001$). Students also responded to our key measures of internal-credit: “When you use a calculator [pencil and paper] to answer a math problem, to what extent do you feel you have personally solved it?” and “To what extent do you feel a calculator [pencil and paper] does math for you?” (reverse coded), presented in random order (each 1 = *Not at all*, 7 = *Extremely*). These items were not significantly correlated ($ps > .47$), which we expected based on prior pretest results, but we retained both measures to maximize comparability across the pretests. The items were examined individually.

Results

A 2 (tool: calculator vs. paper-pencil) \times 2 (evaluation type: instrumentality vs. internal-credit) repeated-measures analysis revealed a main effect of means ($F(1, 44) = 41.00, p < .001$) such that pencil-paper ($M = 6.06, SD = 1.08$) received higher overall evaluations than calculators ($M = 4.98, SD = 1.75$), which makes sense given the ubiquity of this tool in completing math exams. In addition, the analysis revealed a main effect of evaluation type ($F(1, 44) = 18.87, p < .001$) such that instrumentality evaluations ($M = 5.86, SD = 1.04$) were higher than internal-credit evaluations ($M = 5.19, SD = 1.87$), which makes sense given these are two key means used to complete math tests. Critically, we observed the expected interaction ($F(1, 44) = 104.37, p < .001$). The calculator was more instrumental ($M = 6.17, SD = 0.78$) than pencil-paper ($M = 5.54,$

$SD = 1.17$; $t(44) = -3.06$, $p = .0038$). Conversely, the calculator afforded less internal-credit ($M = 3.80$, $SD = 1.65$) compared to paper-pencil ($M = 6.58$, $SD = 0.66$; $t(44) = 10.45$, $p < .001$). The second measure of internal-credit (feeling the means solves math for you, reverse coded) also revealed the calculator ($M = 2.24$, $SD = 1.26$) afforded less internal-credit than paper-pencil ($M = 4.82$, $SD = 2.21$; $t(44) = 6.27$, $p < .001$).

Study 4


Email from Professor

Dear Students,

Welcome to **Quantitative Reasoning**! As you know, we will meet 10am Monday-Friday. This course focuses on analyzing topical, real-life problems from a quantitative perspective. We'll use basic algebra, geometry, and mathematical theories to inform our understanding of complex, real-world problems.

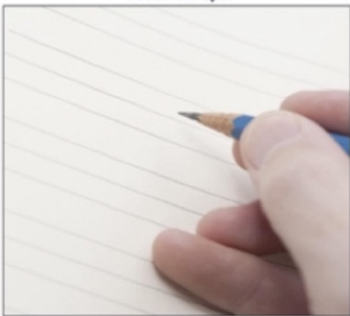
The policy of this course is to give you the **option to either use a calculator or pencil & paper** on quizzes, the midterm, and the final exam. Each of these tests is designed such that **you will not need a calculator—all questions are possible to answer as quickly and effectively by hand**. Nevertheless, you may opt to use a calculator if you so choose. There is no bonus or penalty for selecting either option. (Note: I only allow students to use the "Sharp Basics 8-Digit Dual Powered Calculator"—available for purchase in the campus book store and pictured below.)

Calculator



or

Pencil & Paper



Please don't hesitate to stop by during office hours (listed on my website) if you have any questions about this policy.

Regards,
Prof. G

Study 5

Goal Activation and Identity-Centrality Writing Task. “My Financial Goals that Define Who I Am. For many people, the long term financial goals they set are a big part of their identity. In the space below, please write about these long term financial goals. Please consider why these long term financial goals are an important aspect defining who you are as a person. Discuss in what ways your long term financial goals are important and central to your identity.”

Control item, task ease. “How easy was it for you to write about your long term financial goals?”

Control item, confidence in abilities. “How confident do you feel in your own abilities to attain your long term financial goals?”

Manipulation-check of identity-centrality. “To what extent do the goals you discussed define who you are as a person?” and “How central to your identity is being a financially responsible person?”

Study 6

Mixed. Based on what you know about this class, you feel there is a chance you will get an A but there is also a chance you won't.

Control. Students in the control condition received no information about success or failure.

Filler Items. “How likely are you to use the following things to help you on the final exam:” [1] Study more both the night before and the morning of the exam, [2] Get a good night of sleep, [3] Eat a nutritious breakfast the morning of the exam (all 1 = *Not at all* to 7 = *Extremely*)

Supplementary Analyses. We conducted a supplementary analysis to examine the effect of success (vs. non-success) on self-handicapping choice and self-sabotaging preference based on internal-credit and external-blame needs. Specifically, we performed a regression with anticipation condition (succeed = 1, all others = -1), mean-centered internal-credit need ($M = 5.39$, $SD = 0.89$), mean-centered external-blame need ($M = 4.45$, $SD = 1.36$), and two-way interactions between anticipation and blame-need, and anticipation and credit need on students' choice of the self-handicapping option (no = 0, yes = 1; students' choice to go out with friends the night before the exam). This analysis showed a main effect of anticipation ($b = -0.36$, $SE = .13$, $\chi^2(1, N = 397) = 7.60$, $p = .006$), such that those in the succeed condition were more likely to go out (74.5%) than those in the fail condition (57.9%). This analysis also showed a main effect of blame need ($b = 0.30$, $SE = .10$, $\chi^2(1, N = 397) = 9.48$, $p = .002$) such that greater blame need increased the likelihood of self-handicapping by going out with friends before the exam. Finally, the analysis showed an interaction between anticipation and blame need ($b = 0.23$, $SE = .10$, $\chi^2(1, N = 397) = 5.71$, $p = .02$). No other effects were significant ($ps > .36$). Thus, the results of this analysis mirrored those of the logistic regression on self-handicapping conducted in Study 6.

To probe the interaction between anticipation and blame needs further, we used the PROCESS Macro for SPSS Model 1 to examine the effect of condition (success vs. non-success) on self-handicapping (i.e., by going out with friends the night before the exam) at different levels of the moderator variable, external-blame need. Results show this interaction is significant for external-blame need ≤ 4.85 (which is 0.41 SD above the mean of external-blame need, with 44.6% of the data falling below this point). Thus, at high levels of external-blame need, all students chose the self-handicapping option; whereas, at low levels of external-blame need,

choice of the self-handicapping option hinged on anticipation of non-success (but not success). Specifically, given anticipated non-success, the effect of external-blame need on choice was positive and significant ($b = 0.53$, $SE = .10$, $Z(397) = 5.27$, $p < .001$, 95% CI [0.33, 0.72]), such that greater blame need increased the likelihood of self-handicapping by going out with friends prior to the exam. However, given anticipated success, the effect of external-blame need on choice was attenuated and not significant ($p = .81$). Thus, again the results of this analysis mirrored those found using the PROCESS Model 1 on self-handicapping conducted in Study 6.

We also performed a regression with anticipation condition (succeed = 1, all others = -1), mean-centered internal-credit need ($M = 5.39$, $SD = 0.89$), mean-centered external-blame need ($M = 4.45$, $SD = 1.36$), and two-way interactions between anticipation and blame-need, and anticipation and credit need on students' average preferences for self-sabotaging options (foregoing the tutor and not requesting extra time). This analysis showed a main effect of external-blame need ($b = 0.67$, $SE = .05$, $t(395) = 12.93$, $p < .001$) such that greater need to externalize blame increased students' preferences for these self-sabotaging means. Central to our theorizing, this analysis also showed an interaction between condition and internal-credit need ($b = 0.16$, $SE = .08$, $t(395) = 1.90$, $p = .058$). No other effects were significant ($ps > .46$). Thus, again the results of this analysis mirrored those of the regression on self-sabotaging conducted in Study 6.

To probe the interaction between anticipation condition and credit needs further, we again used the PROCESS Macro for SPSS Model 1 to examine the effect of condition (success vs. non-success) on self-sabotaging (i.e., by reducing preferences for a tutor or requesting extra time) at different levels of the moderator variable (internal-credit need). Results show two

Johnson-Neyman regions of significance: this interaction is significant for internal-credit need ≤ 4.77 (which is 0.61 SD below the mean of internal-credit need, with 16.96% of the data falling below this point) and is significant for internal-credit need ≥ 6.48 (which is 1.09 SD above the mean of internal-credit need, with 13.71% of the data above this point). Critically, given anticipated success, the effect of internal-credit need on choice was negative and significant ($b = -0.50$, $SE = .18$, $t(397) = -2.84$, $p = .005$, 95% CI $[-0.85, -0.16]$), such that greater credit need increased the likelihood of self-handicapping (i.e., decreased preferences for getting a tutor or requesting extra time). However, given anticipated non-success, the effect of internal-credit need on preference was attenuated and not significant ($p = .47$). Thus, finally, the results of this analysis mirrored those found using PROCESS Model 1 on self-sabotaging conducted in Study 6.

The results of this supplementary analysis help clarify that focusing students on how they “won’t get an A” (failure), “might get an A, but might not” (mixed), and a pure control where goal outcomes are not made explicit all elicit similar preferences, which differ from those that arise when students are purely focused on success (i.e., “certain to get an A”). In short, only a direct focus on certain success elicited self-sabotaging preferences, which were driven by the need for internal-credit. This supplementary analysis thus helps to clarify that success (vs. non-success) focus is the primary driver of self-sabotaging, which supports our theorizing in that people reduce their preferences for the most instrumental means when success is certain. Future research might explore giving explicit and certain failure (e.g., “you are certain to get an F”). In this scenario, we would anticipate more extreme self-handicapping driven by the need to protect the ego via external-blame.

Study 7

Instructions. Imagine you enroll in a class on Quantitative Reasoning for the upcoming school year. You get the following message from the professor (see Study 4, above, for email).

Math Skill. To what extent does your major rely on you having strong math skills? 1 = *Not at all*, 7 = *Extremely*

Explicit self-esteem (adapted from Rosenberg, 1965). I feel that I have a number of good qualities; I feel I have much to be proud of; I take a positive attitude toward myself; On the whole, I am satisfied with myself. 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Agree*, 4 = *Strongly Agree*

Implicit self-esteem (Gebauer et al., 2008). How much do you like your first name? 1 = *Not at all*, 7 = *Extremely*

Locus of control (adapted from Sapp & Harrod, 1993). My life is determined by my own actions; I can pretty much determine what will happen in my life; To a great extent, my life is controlled by accidental happenings (reverse coded); When I get what I want, it's usually because I'm lucky (reverse coded). 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Agree*, 4 = *Strongly Agree*

Implicit theories (adapted from Hong et al., 1997) People can substantially change the kind of person they are; People can change even their most basic qualities; People are who they are and cannot change (reverse coded). 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Agree*, 4 = *Strongly Agree*

Attributions (adapted from Gilbert & Malone, 1995; Greenwald, 1980; Kelley, 1973; Malle, 1999; Ross & Nisbett, 1991).

Need for Ego-Enhancing Attributions. When I do good things, it is: 1 = *Always because of who I am as a person*, 2 = *Often because of who I am as a person*, 3 = *Sometimes because of who I am as a person*, 4 = *Sometimes because of the situation I'm in*, 5 = *Often because of the situation I'm in*, and 6 = *Always because of the situation I'm in*

Need for Ego-Protecting Attributions. When I do bad things, it is: 1 = *Always because of who I am as a person*, 2 = *Often because of who I am as a person*, 3 = *Sometimes because of who I am as a person*, 4 = *Sometimes because of the situation I'm in*, 5 = *Often because of the situation I'm in*, and 6 = *Always because of the situation I'm in*

Attributions about Others. When other people do good things, it is: 1 = *Always because of who they are as a person*, 2 = *Often because of who they are as a person*, 3 = *Sometimes because of who they are as a person*, 4 = *Sometimes because of the situation they're in*, 5 = *Often because of the situation they're in*, and 6 = *Always because of the situation they're in*

Attributions about Others. When other people do bad things, it is: 1 = *Always because of who they are as a person*, 2 = *Often because of who they are as a person*, 3 = *Sometimes because of who they are as a person*, 4 = *Sometimes because of the situation they're in*, 5 = *Often because of the situation they're in*, and 6 = *Always because of the situation they're in*

Extrinsic versus intrinsic motivation (adapted from Ryan & Deci, 2000). When I pursue important goals, my drive: (1 = *Always come from self-satisfaction from my engaging in the process*, 6 = *Always comes from the rewards I'll get from finishing*)

Self-efficacy (adapted from Bandura, 1982). When it comes to pursuing my goals, I consider myself: (a) efficient, (b) effective, (c) competent, and (d) skillful (1 = *Not at all*, 7 = *Extremely*)

Study 8

Identity-salience Manipulation. To begin this survey, please type your first name in the box below and write a few words about yourself.

Identity-central Manipulation. To begin this survey, please write a few words to describe why being an organized person is a central aspect of your identity, why being organized defines who you are as a person.

Non-identity-central Manipulation. To begin this survey, please write a few words to describe why being an organized person is not a central aspect of your identity, why being organized is only one of many other things that define who you are as a person.

Control. To begin this survey, please type today's date in the box below and a few words about the weather outside.

Google One Advertisement. Ready to get you organized, whenever you are. Google One will be the one to get you organized across your devices including your phone, Google home, etc. Google One is the one that will get you organized by proactively:

- Scheduling meetings...
- Sending emails and texts ...
- Setting alarms and timers ...
- Checking your availability for appointments ...

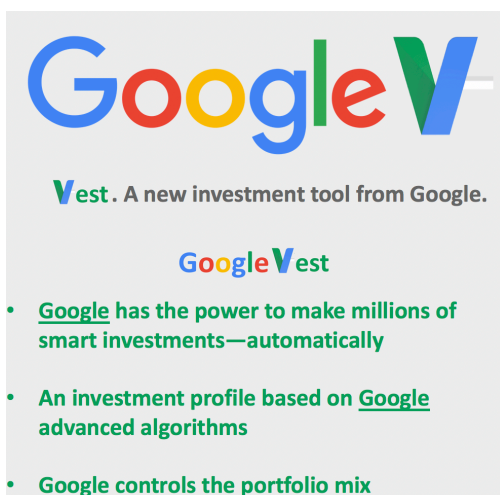
- Naming and sorting your files ...
- Reminding you of upcoming holidays and events ...
- Putting together shopping lists ...
- Translating for you ...
- Playing music ...
- Navigating to a destination ...
- Helping you 24/7 on any device ...

Instead of you having to figure it all out, Google One can do it for you.

Manipulation Check for Advertisement. Allocating credit to Google One and to yourself for getting organized. Imagine Google One gets you organized for the upcoming month. How much credit should Google One get for getting you organized and how much credit do you deserve? There are a total of 100 points. Please divide the 100 points between Google One and yourself, where each point represents how much credit is due for getting you organized. For example, if Google One deserves all the credit, give 100 points to Google One and 0 points to you. Or, if you deserve all the credit, give 0 points to Google One and 100 points to you. If credit is deserved equally by both, give 50 points to each. You can allocate the points any way you wish, but they must add up to 100.

Study 9

More Effective Condition



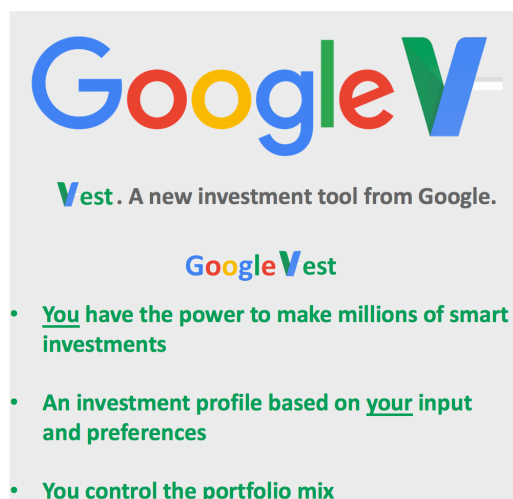
Google V

Vest. A new investment tool from Google.

Google Vest

- Google has the power to make millions of smart investments—automatically
- An investment profile based on Google advanced algorithms
- Google controls the portfolio mix

Less Effective Condition



Google V

Vest. A new investment tool from Google.

Google Vest

- You have the power to make millions of smart investments
- An investment profile based on your input and preferences
- You control the portfolio mix

Instructions. For many people, the long term financial goals they set are a big part of their identity. In the space below, please write about these long term financial goals. Please consider why these long term financial goals are an important aspect defining who you are as a person. Discuss in what ways your long term financial goals are important and central to your identity.

Identity-Centrality. To what extent would you say your long-term investment goals define who you are as a person? 1 = *Not at all*, 7 = *Extremely*

Product Preference. Would you use Google Vest? (1 = *no*, 2 = *yes*); How strong is your preference? (1 = *strongly prefer not to use*, 7 = *strongly prefer to use*); How interested are you in getting Google Vest? (1 = *Not at all*, 7 = *Extremely*)

Ego-Enhancing. How self-affirmed would you feel while using Google Vest? 1 = *Not at all*, 7 = *Extremely*

Control Desire. To what extent do you want control over your financial performance? 1 = *Not at all*, 7 = *Extremely*

Effort Enjoyment. To what extent do you enjoy expending effort on financial investing? 1 = *Not at all*, 7 = *Extremely*

Study 10

Ego-Enhancing Attribution from Choice. The most competent people make the best choices.

Manipulation Check. How much do you feel a person's choice reflects their competence? (1 = *Not at all*, 7 = *Extremely*)

VITA

Jessica Gamlin

Kellogg School of Management, Northwestern University
2211 Campus Drive, Evanston, IL 60208

EDUCATION

Kellogg School of Management

Ph.D., Marketing 2019 (Expected)
Dissertation Title: "Self-Sabotaging in Consumer Goal Pursuit"
Chair: Aparna A. Labroo
Committee: Eli J. Finkel, Neal J. Roese, Alice M. Tybout

HEC Paris

MBA, Marketing Specialization 2012

University of Pennsylvania

B.A., Economics 2006

AWARDS

Research Awards

ACR/Sheth Foundation Dissertation Grant Winner - Public Purpose 2018
Best Student Paper Award (Dissertation Chapter 1), Emerging Marketing Scholars Symposium 2017
Student Poster Award, SPSP Conference 2017
Travel Grant Recipient, SPSP Conference 2017

Academic Scholarships

Northwestern Graduate Fellowship 2014-Present
Northwestern Conference Travel Grant 2016
HEC Excellence Scholarship 2011
Forté Foundation Fellowship 2011

RESEARCH INTERESTS

Consumer Behavior, Goals, Instrumentality, Identity, Choice.

PUBLICATIONS (see Appendix for abstracts)

Gamlin, Jessica, Ping Dong, Aparna A. Labroo, and Aaron Robinson (2019), "Evoking Goals to Be Responsible: When Political Cues Increase Utilitarian Choice," *the Journal of the Association for Consumer Research*.

PAPERS UNDER REVIEW OR IN PREPARATION

Gamlin, Jessica and Aparna A. Labroo, "Self-Sabotaging: Preferences for Less Instrumental Means During Goal Pursuit," (Dissertation Chapter 1), *Preparing for resubmission to the Journal of Personality and Social Psychology*.

Gamlin, Jessica and Aparna A. Labroo, "Enhancing the Ego Through Choice of Less Effective Products," (Dissertation Chapter 2), *In preparation for the Journal of Experimental Social Psychology*.

Gamlin, Jessica, "Self-Handicapping and Self-Sabotaging: A Review of Consumer Choices of Impediments and Low-Instrumentality Means," *In preparation for the Journal of Consumer Psychology*.

Gamlin, Jessica, Rachel E. Smallman, Kai Epstude, and Neal J. Roese, "How Does Dispositional Optimism Predict Counterfactual Direction of Comparison," *Under Review at the Journal of Personality and Social Psychology*.

Gamlin, Jessica, Maferima Touré-Tillery, and Y. Jin Youn, "Public Displays of Indulgence: Longitudinal Consumer Responses Towards Initially Self-Controlled Versus Indulging Targets," *In preparation for the Journal of the Association for Consumer Research*.

Roese, Neal J. and Jessica Gamlin, "Regrets of Consumer Spending," *In preparation*.

SELECTED RESEARCH IN PROGRESS

"Goals and Brand Preference," with Danielle Brick, *Data collection in process*.

"Self-Sabotaging and Time Allocation," with Aparna A. Labroo, *Data collection in process*.

"Minimalism and Consumer Identity," *Data collection in process*.

OTHER PUBLICATIONS

Gamburg, Jessica and Maferima Touré-Tillery (March 2017), "Making Friends While Pursuing Goals," SPSP Character and Content Blog, <http://spsp.org/news-center/blog/making-friends-pursuing-goals>.

INVITED TALKS

University of Oregon, Eugene, OR	2018
INSEAD, Fontainebleau, France	2018
Penn State University, State College, PA	2018
University of Iowa, Iowa City, IO	2018
Loyola Marymount University, Los Angeles, CA	2018

CONFERENCE TALKS

- Gamlin, Jessica, Rachel E. Smallman, Kai Epstude, and Neal J. Roese (2019), "Does Dispositional Optimism Predict Counterfactual Direction of Comparison?" *Data Blitz at Society for Personality and Social Psychology*, Portland, OR.
- Gamlin, Jessica, Aparna A. Labroo (2018), "The Self in Self-Sabotaging: Devaluing Instrumental Means When Pursuing Identity Central Goals," *Special Session at Society for Consumer Psychology*, Dallas, TX.
- Gamlin, Jessica, Aparna A. Labroo (2017), "The Self in Self-Sabotaging: Devaluing Instrumental Means During Pursuit of Identity Central Goals," *Emerging Marketing Scholars Symposium*, Logan, UT. *Winner of 'Best Student Paper' Award.*
- Gamburg, Jessica, Maferima Touré-Tillery, and Y. Jin Youn (2017), "Don't Succumb to My Temptations: Social Avoidance as a Strategy to Protect Valued Goals," *Society for Consumer Psychology*, San Francisco, CA.

CONFERENCE POSTERS

- Gamburg, Jessica, Maferima Touré-Tillery and Y. Jin Youn (2017), "Don't Succumb to My Temptations: Social Avoidance as a Strategy to Protect Valued Goals," *Society for Personality and Social Psychology*, San Antonio, TX. Winner of the Student Poster Award.
- Gamburg, Jessica, Maferima Touré-Tillery and Y. Jin Youn (2016), "Don't Succumb to My Temptations: Social Avoidance as a Strategy to Protect Valued Goals," *Society for Judgment and Decision Making*, Boston, MA.

SELECT TEACHING ASSISTANT EXPERIENCE

Marketing Strategy

Tim Calkins and Julie Hennessy, Markstrat Strategic Marketing Simulation	2016 - 2018
Alex Chernev, PharmaSim Marketing Management Simulation	2016

Advertising Strategy

Brian Sternthal	2015 & 2016
Derek Rucker	2017

Strategic Brand Management

Alex Chernev	2016, 2017 & 2019
Neal J. Roese	2017

Digital Advertising

Lakshman Krishnamurthi	2017
------------------------	------

Consumers, Culture, and Leadership

Greg Carpenter	2017
----------------	------

REFERENCES

Aparna A. Labroo

Professor of Marketing
Northwestern University
Kellogg School of Management
(847) 491-5743
a-labroo@kellogg.northwestern.edu

Neal J. Roese

John L. and Helen Kellogg Professor of
Marketing
Northwestern University
Kellogg School of Management
(847) 491-7109
n-roese@kellogg.northwestern.edu

Alice M. Tybout

Harold T. Martin Professor of Marketing
Northwestern University
Kellogg School of Management
(847) 491-2723
amtybout@kellogg.northwestern.edu

Eli J. Finkel

Professor of Social Psychology and
Management & Organizations
Northwestern University
Weinberg College of Arts and Sciences and
Kellogg School of Management
(847) 491-3212
finkel@northwestern.edu

SELECT COURSEWORK

Marketing

C. Miguel Brendl, "Psychological Theory in Consumer Behavior"
Bobby Calder and Brian Sternthal, "Philosophy of Research"
Greg Carpenter, "Marketing Strategy"
Alex Chernev, "Consumer Decisions"
Aparna Labroo and Derek Rucker, "Theory Building and Testing" I and II
Ed O'Brien and Anuj Shah, "Current Topics in Behavioral Science" (at Booth School of Business)
Neal Roese, "Judgement and Emotion"

Methods

Eric Anderson, "Quantitative Modeling"
J. Michael Bailey, "Linear Models" and "Experimental Design"
Ulf Böckenholt, "Problems and Solutions in Applied Data Analysis" I and II
Simone Ispa-Landa, "Field Methods and Qualitative Research"

Psychology and Management

Galen Bodenhausen, "Implicit Social Cognition"
Eli J. Finkel, "Self-Regulation" and "Interpersonal Relationships"
Wendy Gardner, "The Self"
Dan Molden, "Prosocial Behavior"
J. Keith Murnighan, "Economics, Social Psychology, and their Experiments"
Nicole Stephens, "The Individual and the Organization"

SELECT PROFESSIONAL AND INTERNATIONAL EXPERIENCE

One Acre Fund, Kenya, Business Development Manager	2012 - 2014
United States Consulate in Istanbul, Turkey, Pol-Econ Section Graduate Intern	2012
United States Peace Corps, Senegal, Small Enterprise Development Volunteer	2008 - 2010
Heitman, USA, Commercial Real Estate Finance Acquisitions Associate	2006 - 2008
Language Skills: Proficient in French and Wolof; Knowledge of basic Turkish	

APPENDIX: SELECTED ABSTRACT

Gamlin, Jessica, Ping Dong, Aparna A. Labroo, and Aaron Robinson (2019), "Evoking Goals to Be Responsible: When Political Cues Increase Utilitarian Choice," *the Journal of the Association for Consumer Research*.

Abstract: Political systems enable many goals consumers can aspire towards and achieve. When consumers believe the system they are embedded in is irresponsible, political cues—i.e., reminders of the political system—heighten their desire for responsible governance. This desire, in turn, evokes consumers' own goals to be responsible, increasing utilitarian (vs. hedonic) preferences. Employing quasi-experimental methods, we first show salience of political cues accompanying Election (vs. non-Election) Day increases utilitarian-preference (Study 1). Employing experiments, we then show situational political (vs. non-political) cues also increase utilitarian-preference, among consumers desiring responsible governance (Study 2), by heightening consumers' own goals to be responsible (Studies 3A-3B). We also find marketers employ goal-consistent advertising: political (vs. non-political) podcasts include more utilitarian (vs. hedonic) product advertisements (Study 4). The effects are independent of consumers' ideology or mood. This research thus introduces novel theory incorporating the macro-institutional influence of political cues on consumer goals and choice.