

Identity Threats, Compensatory Consumption, and Working Memory Capacity: How Feeling Threatened Leads to Heightened Evaluations of Identity-Relevant Products

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Despite abundant work documenting consumers' reliance on symbolic self-completion after experiencing a self-discrepancy, surprisingly little research has investigated the underlying psychological processes that drive this type of compensatory consumption. This article addresses this critical gap, demonstrating that self-discrepancies triggered by identity threats reduce working memory capacity (WMC), and these reductions in WMC mediate compensatory consumption. Consumers process identity-relevant products more positively than neutral products, establishing a causal chain between self-threats, WMC, and compensatory consumption. In addition, identity-consistent experiences facilitate increases in WMC. Importantly, by utilizing negative emotions as the *source* of self-threat, this article also demonstrates that identity-inconsistent emotions can serve as a source of threat that is not only impactful, but also easily manipulated by managers through advertisements.

Keywords: compensatory consumption, identity threat, emotions, working memory capacity

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A thriving literature in consumer research has repeatedly demonstrated that consumers often use products and services as a method of self-repair after experiencing a threatening self-discrepancy, through a process known as compensatory consumer behavior (Mandel et al. 2017). One common source of self-discrepancy is a threat to an important identity, be it a personal identity (e.g., a powerful or attractive individual) or a social identity (e.g., a University of Pennsylvania Quaker). When there is undesirable inconsistency between how individuals perceive themselves and how they want to view themselves (Higgins 1987), the identity is threatened and individuals often consume products and services as a way to compensate (Grønmo 1997; Woodruffe 1997).

Consumers buy high-status items like executive pens and briefcases when they feel powerless (Rucker and

Galinsky 2008), appearance-enhancing accessories when they feel physically unattractive (Hoegg et al. 2014), and university t-shirts and hats when they feel insecure about belonging at the school (Braun and Wicklund 1989). This type of compensatory consumption—that which results in heightened attraction to products that symbolize mastery on the dimension of the self-discrepancy—is known as symbolic self-completion (Rucker and Galinsky 2013; Wicklund and Gollwitzer 1981, 1982).

Despite the abundance of articles documenting consumers' reliance on symbolic self-completion after they experience a self-discrepancy, surprisingly little research has investigated the underlying psychological processes that drive this type of compensatory consumption. At the meta level, it is clear that consumers are motivated to try to compensate for their self-discrepancies when they feel threatened, and that this manifests via positive evaluations of consumption items that are symbolically linked with the desired identity. However, the literature has remained relatively silent about the cognitive processes accompanying the motivational drive by which consumers come to hold heightened evaluations of an executive pen when they are made to feel powerless, a beautiful scarf when they feel unattractive, or a university sweatshirt when they feel unintelligent. In fact, rather than providing insight into what is happening inside consumers' minds after they experience an identity threat, prior work has typically taken compensatory consumption as evidence for the unobserved internal processes. In other words, compensatory consumption is used as proof that an individual has experienced an identity threat, but very little is known about the psychological processes that intervene between threat and compensatory consumption.

We examine these underlying psychological processes, taking the perspective that basic mechanisms such as executive cognitive control contribute to the responses triggered by an identity threat. Understanding the basic mechanisms underlying compensatory consumption is vital, as early-stage processes form the basis of later-stage cognition and action (Houghton and Tipper 1994). The current research addresses this critical gap in the literature by proposing that reductions in working memory capacity (WMC) resulting from identity threats significantly impact and shape subsequent compensatory consumption product choices. In so doing, we make several key contributions.

First, we demonstrate that WMC plays an instrumental role in the compensatory consumption process. While previous research has shown a link between stereotype threats and WMC (Schmader and Johns 2003), no prior work has even suggested that WMC is associated with compensatory consumption or explored if the detrimental effects on WMC generalize to other types of threats. By showing that consumers process identity-relevant products more positively than neutral products, we are able to demonstrate a causal chain between self-threats, WMC, and

compensatory consumption. In addition, whereas the existing literature has focused primarily on factors that hinder WMC, and remained largely silent on situational factors that can improve WMC, the current research is also the first to demonstrate that identity-consistent experiences can actually facilitate improvements in executive cognitive control.

Additionally, by utilizing negative emotions as the source of self-discrepancy in our experiments, we also contribute theoretically by demonstrating that identity-inconsistent negative emotions can serve as a source of identity threat. While previous work has shown that discrete negative emotions can be components of an identity prototype (Coleman and Williams 2013), this article demonstrates that negative emotions that are inconsistent with an identity prototype threaten the active identity and prompt compensatory consumption. Thus, rather than being only a consequence of self-threat, as explored in prior work (Angle and Forehand 2016; Burke and Stets 1999), this research shows that negative emotions can also serve as an important source of self-threat that is not only impactful, but also easily manipulated by managers through advertisements.

THEORETICAL BACKGROUND

Identity Threats, Working Memory Capacity, and Compensatory Consumption

Although the relationship between identity threats and compensatory consumption is well established (Cutright et al. 2011; Gal and Wilkie 2010; Gao, Wheeler, and Shiv 2009; Kim and Rucker 2012), surprisingly little work has investigated the intervening psychological processes that lead to such consumption choices (for an exception, see Angle and Forehand 2016). Previous research has shown that stereotype threats can reduce working memory capacity (Quinn and Spencer 2001; Schmader and Johns 2003). To date, however, no research has examined whether these threat-driven changes in basic cognitive processes are associated with symbolic self-completion. Working memory capacity is a core component of executive cognitive control, used to direct goal-consistent action (Engle and Kane 2004), and thus should be relevant to the compensatory consumption process. The present work addresses this gap by proposing that changes in executive cognitive control are instrumental in compensatory consumption.

Prior relevant work in psychology has almost wholly focused on the impact of self-threats on academic success or cognitive performance; while useful for understanding the penalties levied by threats, it does little to help illuminate how changes in cognitive processes might drive symbolic self-completion. Specifically, research has shown that various types of self-threats (stereotype threat, Schmader and Johns 2003; social exclusion, Baumeister, Twenge, and Nuss 2002) can lower cognitive performance as individuals

process and try to cope with the threat. For instance, women who were told that an exam would test “quantitative ability” (vs. “memory ability”) performed worse than men, an effect driven by greater feelings of anxiety and concern about being stereotyped (Schmader and Johns 2003). A self-discrepancy thus diminishes cognitive resources; monitoring how ongoing behavior compares to one’s desired behavior, and coping with the accompanying dissonance associated with that discrepancy, consumes executive control (Carver and Scheier 1990; Schmader and Johns 2003). Together, these processes serve to reduce overall cognitive processing capacity, hindering individuals’ central executive control (Engle 2001). Thus, reduced WMC is a critical outcome of experiencing a threatening self-discrepancy.

Building on this literature, we contend that changes in executive cognitive control caused by identity threats play a causal role in the compensatory consumption process. More specifically, we propose that reductions in WMC mediate increases in the attractiveness of identity-relevant products. The theoretical rationale for this causal relationship hinges on feelings of fit that arise from identity-consistent stimuli (Oyserman 2009). Specifically, individuals are attracted to identity-consistent stimuli and this attraction is amplified when executive cognitive control is limited. Individuals process information that is consistent with the self more easily than self-inconsistent information (Guo and Main 2017; Lee and Aaker 2004; Sengupta and Johar 2002). Identity-relevant stimuli are processed more easily than neutral stimuli (Bargh 1982), and this ease of processing should be a critical determinant of product attitudes because of the resulting reduction in cognitive resources and the importance of identity-relevant stimuli for threat repair.

Extending this, we argue that the changes in WMC caused by identity threats will lead to higher evaluations of identity-relevant products through the following process. We expect that threats cause reductions in WMC, thus impairing information processing ability. Importantly, the reduction in processing ability heightens the effects of executive cognitive control on goal-relevant stimuli (Lavie 2005); specifically, because processing ability is impaired, the identity fit that makes identity-relevant products easier to process will be amplified, becoming even more diagnostic and impactful to subsequent evaluations. And, consistent with prior work on mere exposure (Bornstein and D’Agostino 1992) and fluency (Winkielman et al. 2003), which shows a boost in evaluations from ease of processing, the end result of this process will be heightened evaluations for the easier-to-process, identity-relevant products. Notably, we contend that it is because identity threats cause reductions in WMC that the heightened evaluations of identity-relevant products emerge.

Indeed, previous work indicates that information that is easier to process will be more diagnostic for evaluations when processing resources are impaired (Bornstein and D’Agostino 1992). For example, White et al. (2016) found that thoughts about contamination have a much stronger negative impact on product evaluations when consumers’ processing resources are constrained. In the present context, this suggests that when WMC is impaired, the ease of processing caused by feelings of fit with identity-relevant products will have an even stronger positive impact on product evaluations than when WMC is maintained or enhanced.

Identity-Consistent Experiences and Working Memory Capacity

In contrast to the negative effects of identity threats that reduce WMC, the current work also contributes to the literature by proposing a positive effect of identity-consistent experiences on executive cognitive control. Previous research suggests that identity-consistent experiences can lead to feelings of fit, leading to a potentiated motivational state in preparation for identity-consistent procedures and actions (Oyserman 2009). Similarly, research has found that a match between identity activation at encoding and retrieval enhances memory (Mercurio and Forehand 2011), suggesting that social identities may influence cognitive processes in a dynamic, facilitative fashion. Together, these perspectives indicate that experiences that “match” an active self-identity can lead to enhanced cognitive processing. Thus, we contend that identity-consistent experiences should lead to an identity-syntonic state, enhancing cognitive resources and facilitating an increase in WMC. Because prior work has been largely silent on ways to temporarily improve WMC, in so doing, the current research is the first to identify a situational factor that can increase WMC without explicit memory training tasks (Baddeley 1992).

Notably, although identity-relevant products will be processed more easily anytime a self-identity is activated (Oyserman 2009), as hypothesized above, we do not predict that the ease of processing will result in heightened evaluations of identity-relevant products when WMC is enhanced. Consistent with previous work that shows evaluations are shaped more by associations under conditions of constrained cognitive capacity (Bornstein and D’Agostino 1992; White et al. 2016), we contend that the ease of processing identity-relevant products will not be diagnostic in shaping consumers’ product evaluations when WMC is enhanced. Thus, under conditions of enhanced WMC, we do not predict a boost in consumers’ evaluations of identity-relevant products.

Identity-Inconsistent Negative Emotions as an Identity Threat

While traditional self-threat research has studied threats generated by explicitly devaluing or undermining an important aspect of the self (e.g., being told one has significantly lower “perceptual intelligence” compared to the average college student, Kim and Rucker 2012; describing one’s university as underperforming relative to a competitor, White, Argo, and Sengupta 2012; having to wear a larger clothing size than usual, Hoegg et al. 2014), we depart by utilizing a previously undocumented source of self-discrepancy: negative emotions. Importantly, this type of threat does not result from an overt attack on one’s identity or engaging in a behavior that might lead others to categorize one’s identity incorrectly, but rather is an internal recognition by the individual that she is not living up to the identity prototype. This is important, as emotions are functional and trigger a cascade of physiological, cognitive, and behavioral responses to enable action (Frijda 1986; Lerner and Keltner 2000). Thus, identity-inconsistent emotions should be experienced as particularly discrepant self-threats, triggering changes in basic cognitive processes as well as consumer choice.

Previous work has demonstrated that discrete negative emotions can be components of an identity prototype (Coleman and Williams 2013). We build upon that research, demonstrating that negative emotions can also be an important source of self-discrepancy. In so doing, the current work also contributes theoretically by demonstrating that identity-inconsistent negative emotions can serve as an identity threat. Although previous research has demonstrated that individuals want to feel identity-consistent negative emotions and seek out ways to facilitate them (Coleman and Williams 2013, 2015), no research has yet considered how individuals respond to experiencing negative emotions that are *inconsistent* with an identity prototype. If discrete negative emotions are critical to successful identity enactment, experiencing identity-inconsistent negative emotions should be perceived as a threat to the active identity.

Thus, the current work contributes to the identity and identity threat literature by identifying a novel source of threat (identity-inconsistent negative emotions), as well as by delineating the cognitive processes by which threats lead to compensatory consumption. Notably, whereas the majority of previously documented identity threats lie beyond the control of the marketer, identity-inconsistent negative emotions are a unique source of threat that are not only effective in driving compensatory consumption, but also easily manipulated by managers through the marketing mix. In addition, unlike other types of threats, which most typically are able to serve only as a threat, negative emotions are a single kind of stimulus that can both threaten or affirm, making them a unique and ideal source

through which to examine the potential reductions as well as the facilitative effects of threats on cognitive processes (i.e., WMC).

Summary

In a departure from previous research on symbolic self-completion that uses compensatory consumption as evidence that an individual has experienced an identity threat, we investigate the intervening cognitive process that leads consumers experiencing self-discrepancies to find identity-relevant products more attractive. Specifically, we demonstrate that self-discrepancies triggered by identity threats reduce working memory capacity and these reductions in WMC mediate compensatory consumption, as identity-relevant products are processed more easily, and thus are evaluated more positively than neutral products. In addition, we show that identity-consistent experiences actually have the reverse effect and facilitate *improvements* in WMC, but do not impact evaluations of identity-relevant products.

We test our conceptual model using identity-inconsistent negative emotions as the source of identity threat, thereby also demonstrating that negative emotions can be critical inputs into the identity maintenance system and processes of symbolic self-completion. Using negative emotions as the source of threat also allows us to examine WMC from both an enhancement (in response to identity-consistent emotions) and a reduction (in response to identity-inconsistent emotions) perspective with a single stimulus. In each of our experiments, we activate a social identity and then provide a negative emotional experience that is either consistent or inconsistent with the activated identity prototype. The first two experiments, 1A and 1B, provide initial tests of the effects of emotion-based identity threats on both product evaluations and working memory capacity. In line with our predictions, in experiment 1A, we show that individuals experiencing identity-inconsistent negative emotions express higher evaluations of identity-relevant products, and, in experiment 1B, that identity threats lower WMC, while identity-consistent negative emotions enhance WMC. The final two experiments then provide critical support for the proposed psychological underpinnings of compensatory consumption by showing that reductions in WMC mediate identity-relevant product evaluations (experiment 2), and that global self-affirmation can prevent the impairment of WMC resulting from identity threats (experiment 3).

EXPERIMENT 1A: IDENTITY-INCONSISTENT NEGATIVE EMOTIONS PROMPT COMPENSATORY CONSUMPTION

Experiment 1A is a first test of the effects of identity-inconsistent negative emotions, demonstrating that

experiencing an identity-inconsistent negative emotion can serve as a source of identity threat that prompts compensatory consumption of identity-relevant products.

Note that for the pretest below, sample size was determined in advance based on a targeted number of responses per cell on Amazon Mechanical Turk (MTurk). In the rest of the studies (experiments 1A, 1B, 2, and 3) weekly participation in university behavioral labs determined the sample sizes. We report all measures, conditions, and data exclusions.

Pretest: Identity-Inconsistent Emotions

Before examining the effects of identity-inconsistent negative emotions on executive cognitive control and compensatory consumption, we first conducted a pretest both to confirm our proposed identity-emotion associations and to show that inconsistent negative emotions are indeed perceived as *conflicting* (discrepant) with the active identity, and thus a meaningful form of self-discrepancy or identity threat. Building on and extending prior work, we focus on four identity-emotion pairs: athlete-anger, volunteer-sadness, environmentalist-disgust, and romantic partner-guilt (Coleman and Williams 2013, 2015). While the first three pairs have been examined in previous literature, the romantic partner-guilt identity-emotion pair is investigated here for the first time. These social identities (athlete, volunteer, environmentalist, romantic partner) are widely held among our primarily student participants, and each has uniquely associated negative emotions (anger, sadness, disgust, and guilt, respectively). Anger is likely associated with the athlete identity because its external locus of control focuses attention on the obstacles impeding goal pursuit, inspiring the desire to overcome barriers (Frijda 1986). Sadness is likely relevant for volunteers because its expression indicates a need for help (Izard 1977) and promotes feelings of sympathy and a willingness to engage in prosocial helping behaviors (Small and Verrochi 2009). Disgust may be associated with environmentalists because it arises from appraisals regarding purity and contamination, not only of the self, but also of the social order and context (Haidt et al. 1997). Finally, guilt is likely relevant for the romantic partner identity, as experiencing guilt can lead to more positive relationship engagement and empathetic behaviors toward relationship partners (Beach et al. 1998; Overall et al. 2014).

The pretest was a 4 (identity: athlete, volunteer, environmentalist, romantic partner) \times 5 (emotion: anger, disgust, sadness, guilt, neutral) between-subjects design, run on MTurk. In the pretest, participants read a brief description of a woman that included identity-relevant information (e.g., “Jane volunteers at the local food kitchen”), as well as the focal emotion (e.g., “before volunteering, Jane often tries to feel sad by listening to sad music”). After reading the description, participants rated Jane on four questions

relating to identity enactment (e.g., “How close is Jane to an ‘ideal’ volunteer?”) and indicated the extent to which Jane possessed 10 traits (four focal: athletic, charitable, environmentally friendly, romantic; see table 1). The complete study details are in the web appendix.

Generally speaking, the overall pattern of effects is consistent across identities and measures; the highest levels of identity enactment were observed when the individual was expressing the predicted identity-consistent negative emotion, whereas the predicted identity-inconsistent negative emotions drove decreased perceptions of identity enactment. Consistent with our predictions, this demonstrates that not only do identity prototypes contain “what to feel” information (Coleman and Williams 2013), but they also provide clear guidance about “what *not* to feel,” suggesting that identity-inconsistent negative emotions can be a meaningful source of self-discrepancy.

Procedure and Design

Experiment 1A was a 3 (identity: athlete, volunteer, romantic partner) \times 4 (emotion: anger, sadness, guilt, neutral) design. Participants were 296 students and staff (56.8% female, average age = 21; range 18–42) from a northeastern university, paid \$10 for their participation in a multistudy lab session.

Participants completed three ostensibly unrelated studies: identity prime, negative emotion experience, and product evaluations. First was the identity prime: a writing task to activate either an athlete, volunteer, or romantic partner identity (Reed 2004). In the second task, participants experienced a negative emotion through an autobiographical writing task pretested to reliably elicit the intended emotions (pretest details and results for all emotion manipulations are available in the web appendix). Following a writing procedure used in many previous studies (Strack, Schwarz, and Gschneidinger 1985), participants were first instructed to write about “the 3–5 things that make you the most angry (sad, guilty)” or about “the 3–5 activities you did today” (neutral condition). After listing these items, participants were asked to think about each of the situations they had described, and determine “the one that had been the angriest (saddest, guiltiest)” day of their lives. Then they continued to a second writing task in which they were asked to “write down what they remember” from that one day in their lives, recounting it as vividly as they can such that someone reading their description “might feel angry (sad, guilty) on your behalf just from learning about the situation.” In the neutral condition, participants were asked to “think about the activities that typically occur in your evening.” Neutral condition participants were further asked to “write down a description of your activities” so that “someone reading this might be able to reconstruct the way in which you, specifically, spend your evenings.”

TABLE 1
PRETEST TO EXPERIMENT 1A: EMOTIONS AS PART OF THE IDENTITY PROTOTYPE

Identity	Emotion	Identity enactment		Identity-relevant traits		N
		M	SD	M	SD	
Athlete	Anger	3.65 _a	.68	4.55 _a	.60	22
	Disgust	2.60 _b	.55	3.06 _b	.87	18
	Guilt	2.56 _b	.96	3.00 _b	1.10	21
	Neutral	3.03 _c	.77	3.84 _c	1.21	19
	Sadness	2.19 _b	.81	2.67 _b	.91	21
Environmental	Anger	2.35 _b	.85	3.43 _b	1.08	21
	Disgust	3.88 _a	.71	4.65 _a	.82	21
	Guilt	2.31 _b	.53	3.19 _b	.87	21
	Neutral	3.07 _c	.63	4.00 _c	1.08	20
	Sadness	2.57 _b	.75	3.05 _b	1.02	21
Romantic Partner	Anger	2.29 _b	.86	1.43 _b	.60	21
	Disgust	2.44 _b	.87	1.35 _b	.67	20
	Guilt	3.61 _a	.92	3.00 _a	1.05	21
	Neutral	2.88 _c	.93	1.95 _c	1.10	20
	Sadness	2.25 _b	1.06	2.26 _b	1.28	20
Volunteer	Anger	1.73 _b	.77	2.30 _d	1.03	20
	Disgust	2.08 _b	.66	2.90 _b	1.22	22
	Guilt	2.55 _b	.92	2.90 _b	.97	20
	Neutral	3.10 _c	.82	3.70 _c	1.03	20
	Sadness	3.85 _a	.62	4.52 _a	.98	21

NOTE.—Within each identity, means with different subscripts are different at the $p < .05$ level. For brevity, these contrasts are not fully described, but details are available from the authors upon request.

Finally, compensatory consumption was measured via product evaluations (Gao et al. 2009). Participants rated 20 products: three relevant to each target identity (athlete, volunteer, and romantic partner), and 10 neutral filler products (see the appendix for the products used in all studies). These products were identified through a pretest, which is reported in full in the web appendix. Participants were asked to indicate their attitudes toward each product with a three-item scale: unfavorable/favorable, dislike/like, bad/good (seven-point scales; $\alpha = .94$). Following the product evaluations, participants provided demographic information and were thanked, debriefed, and paid.

Results

Because we expect an identity-inconsistent negative emotional experience to threaten an active identity, we expect processes of symbolic self-completion and compensatory consumption to drive higher attitude ratings for individuals experiencing these emotions (e.g., sadness or guilt for athletes, anger or guilt for volunteers, anger or sadness for romantic partners) than those experiencing an identity-consistent one. For the product evaluations, we averaged the ratings for the three athlete-relevant ($\alpha = .857$), three volunteer-relevant ($\alpha = .799$), three romantic partner-relevant ($\alpha = .862$), and 10 filler ($\alpha = .753$) products; thus, four product types are analyzed.

A repeated-measures ANOVA was run on product evaluations, with identity and emotion as between-subject predictors, and product type as the within-subject factor.

A significant two-way interaction of product type and identity emerged ($F(6, 852) = 51.405, p < .001$), along with a significant two-way interaction of product type and emotion ($F(9, 852) = 3.591, p < .001$), but these were subsumed within the predicted three-way interaction of product type, identity, and emotion ($F(18, 852) = 5.275, p < .001$). This suggests that the effect of emotion and identity on product evaluations depends on the type of product (athlete-relevant, volunteer-relevant, romantic partner-relevant). To explore this three-way interaction, we examine the effects within each product type below (see table 2).

Athlete-Relevant Products. As predicted, athlete-identity participants experiencing the identity-inconsistent negative emotion of sadness had significantly higher ($M = 6.55$) attitudes toward athlete-relevant products, compared to those experiencing anger ($M = 5.26$; $F(1, 284) = 8.007, p < .005$) or a neutral emotion ($M = 5.53$; $F(1, 284) = 11.056, p < .001$). Similarly, athlete-identity participants experiencing the identity-inconsistent negative emotion of guilt had significantly higher ($M = 6.11$) attitudes toward athlete-relevant products, compared to those experiencing anger ($F(1, 284) = 3.841, p = .051$) or neutral emotion ($F(1, 284) = 5.077, p = .025$). There was no difference in the ratings for athlete-relevant goods among athlete-identity participants experiencing sadness or guilt ($p > .25$). Further, there were no differences for athlete-relevant goods across participants with an active volunteer identity (all $p > .18$) or active romantic partner identity (all $p > .175$).

TABLE 2
EXPERIMENT 1A: PRODUCT EVALUATIONS BY IDENTITY, EMOTION, AND PRODUCT TYPE

		Product type								
		Athlete-relevant		Volunteer-relevant		Romantic partner-relevant		Filler		
	Emotion	M	SD	M	SD	M	SD	M	SD	N
Athlete	Anger	5.26	1.77	4.96	1.19	4.98	1.41	6.14	1.03	24
	Guilt	6.11	1.90	5.11	1.27	4.88	1.18	6.20	1.05	29
	Sadness	6.55	1.48	4.72	1.42	5.05	1.86	6.48	.94	24
Volunteer	Neutral	5.53	1.82	5.18	.99	4.91	1.38	6.37	1.25	28
	Anger	3.88	1.46	6.87	1.45	4.44	1.15	6.13	.77	26
	Guilt	4.04	1.31	6.00	1.28	4.31	1.42	6.01	1.32	22
Romantic Partner	Sadness	4.63	1.37	5.56	1.02	4.88	1.18	6.24	.71	25
	Neutral	4.92	1.63	5.73	1.15	4.97	1.26	6.44	.77	24
	Anger	4.34	1.43	4.52	1.23	7.07	1.19	6.07	1.02	23
	Guilt	4.51	2.07	4.94	1.16	5.42	1.59	6.02	.85	28
	Sadness	3.89	1.20	5.22	1.17	6.85	1.64	6.27	1.08	21
	Neutral	4.93	1.44	4.90	1.32	5.73	1.26	6.33	.74	22

NOTE.—The means in bold are significantly different from all other nonbold means in the column, at the $p < .05$ level or better. For brevity, these contrasts are not fully described, but details are available from the authors upon request.

Volunteer-Relevant Products. As predicted, volunteer-identity participants experiencing the identity-inconsistent negative emotion of anger had significantly higher ($M = 6.87$) attitudes toward volunteer-relevant products, compared to those experiencing sadness ($M = 5.56$; $F(1, 284) = 12.653$, $p < .001$), a neutral emotion ($M = 5.73$; $F(1, 284) = 8.397$, $p < .005$), or guilt ($M = 6.00$; $F(1, 284) = 4.083$, $p < .05$). Similarly, volunteer-identity participants experiencing the identity-inconsistent negative emotion of guilt had significantly higher ($M = 6.00$) attitudes toward volunteer-relevant products, compared to those experiencing sadness ($F(1, 284) = 4.877$, $p = .028$) or those experiencing a neutral emotion ($F(1, 284) = 3.944$, $p = .048$). There were no differences in the ratings for volunteer-relevant goods across participants with an active athlete (all $p > .17$) or active romantic partner identity (all $p > .25$).

Romantic Partner-Relevant Products. As predicted, romantic partner-identity participants experiencing the identity-inconsistent negative emotion of anger had significantly higher ($M = 7.07$) attitudes toward romantic partner-relevant products, compared to those experiencing guilt ($M = 5.42$; $F(1, 284) = 12.397$, $p < .001$) or a neutral emotion ($M = 5.73$; $F(1, 284) = 11.042$, $p < .001$). Similarly, romantic partner-identity participants experiencing the identity-inconsistent negative emotion of sadness had significantly higher ($M = 6.85$) attitudes toward athlete-relevant products, compared to those experiencing guilt ($F(1, 284) = 3.840$, $p = .051$) or a neutral emotion ($F(1, 284) = 5.079$, $p = .025$). There was no difference between the ratings for romantic partner-relevant goods for romantic partner-identity participants experiencing anger or sadness ($p > .60$). Further, there

were no differences in the ratings for romantic partner-relevant goods across participants with an active athlete (all $p > .58$) or active volunteer identity (all $p > .15$).

Filler Products. As expected, there were no differences in the ratings for the filler goods regardless of emotion condition or identity: active athlete identity (all $p > .21$), active volunteer identity (all $p > .16$), or active romantic partner identity (all $p > .26$).

Discussion

Experiment 1A provides the first evidence that experiencing an identity-inconsistent negative emotion can serve as a source of identity threat. By showing that identity-inconsistent negative emotions prompt compensatory consumption via elevated attitudes toward identity-relevant products, experiment 1A confirms that negative emotions can be a source of self-threat. While we find significant main effects of identity on identity-relevant products, in accordance with traditional identity salience effects, we also find that experiencing identity-inconsistent emotions leads participants to express even greater preference for the identity-affirming products, consistent with our theory. Participants with a salient athlete identity had higher evaluations of brands that were related to the athlete identity after having experienced sadness or guilt—athlete-inconsistent emotions. Similarly, participants with an active volunteer identity rated products affiliated with the volunteer identity higher when they had experienced anger or guilt—emotions inconsistent with the volunteer-identity prototype. Participants with an active romantic partner identity had higher attitudes toward romantic goods after experiencing the romantic partner-inconsistent emotions of anger and sadness. In all three cases, the highest ratings

for the identity-relevant products occurred after participants with that salient identity had experienced an identity-inconsistent negative emotion, indicative of compensatory consumption from a threatening self-discrepancy.

This pattern of increased evaluations for identity-relevant products is consistent with the literature on symbolic self-completion, wherein consumers cope with a self-discrepancy by seeking out products or services that compensate by signaling mastery in the threatened domain (Rucker and Galinsky 2013; Wicklund and Gollwitzer 1981, 1982). These results offer support for the notion that experiencing an identity-inconsistent negative emotion can serve as a source of self-threat that prompts compensatory consumption by leading to a sense of discrepancy between the identity prototype and current levels of identity enactment. Having established identity-inconsistent negative emotions as a new and meaningful source of identity threat, we now begin to provide support for the current proposed conceptual model, which contends that identity threats lower WMC and these reductions in WMC mediate compensatory consumption. In experiment 1B, we examine the first step in the causal chain by demonstrating that experiencing identity-inconsistent negative emotions can reduce WMC, whereas identity-consistent negative emotions enhance WMC.

EXPERIMENT 1B: IDENTITY-CONSISTENT AND -INCONSISTENT EMOTIONS INFLUENCE WORKING MEMORY CAPACITY

In experiment 1B we examine working memory capacity (WMC) using the operation-span (OSPAN) task developed by Turner and Engle (1989). In so doing, we are able to show that experiencing an identity threat, via identity-inconsistent negative emotions, creates cognitive disruptions and thus reduces WMC, while identity-affirming experiences, via identity-consistent negative emotions, enhances cognitive resources, thereby improving WMC.

Procedure and Design

Experiment 1B was a 3 (identity: athlete, volunteer, control) \times 3 (emotion: anger, sadness, neutral) between-subjects design. Individuals ($N = 176$; 52.8% female, average age = 21; range 18–47) from a northeastern university were paid \$10 for participating in multiple studies.

The experiment was presented as three ostensibly unrelated studies: the identity prime, emotion experience, and a working memory capacity task (OSPAN). The first component of the experiment involved the identity or control prime, manipulated as in the first study, through a writing task. We induced emotions by having participants listen to one of three 3 minute soundtracks, which had been pretested

to reliably elicit anger, sadness, or no emotion (neutral; pre-test details and results are available in the [web appendix](#)).

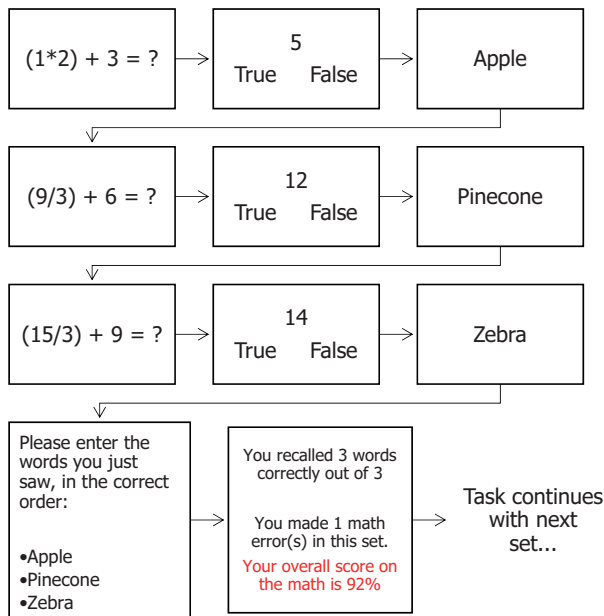
The third part was the OSPAN, a dual-processing task that measures working memory capacity (Conway et al. 2005; Turner and Engle 1989). In this task, participants do two activities simultaneously: solve math problems while memorizing a list of words for later recall. The OSPAN allows assessment of both information storage and rehearsal (recalling the words), but also the concurrent handling of additional information (solving the math equations), and thus measures executive cognitive control and working memory (Engle 2001). In this experiment, the OSPAN was administered entirely on the computer (automated OSPAN: Unsworth et al. 2005).

To summarize the OSPAN task, first a math operation is presented (see [figure 1](#)). After it is (mentally) solved, participants click the mouse and a digit is presented, which is judged as either the correct or incorrect answer to the math equation. Then a word is displayed for 1,200 msec. This sequence—math operation, potential solution, word—is repeated three to five times, depending on the size of the set. At the completion of a set, participants are asked to list the words in the order presented into blank text boxes (uncued recall). After recall, feedback is presented for 2,000 msec. Because it is important that participants attempt to solve the math questions accurately while also memorizing the word lists, a running score on the math problems was provided during each set (highlighted in red; see [figure 1](#)). Participants were encouraged to keep this score above 85%. Participants were also informed that perfect recall on the words was not expected, to reduce performance-driven anxiety (Conway et al. 2005). Prior to the scored OSPAN, participants were guided through an OSPAN practice session, in order to familiarize them with the procedure and determine individual-level math processing time (full details are in the [web appendix](#)).

In the scored OSPAN, participants completed three sets of each set size, ranging from three to five operations/words in each set, for a total of nine sets. All OSPAN parameters are taken directly from the OSPAN (Turner and Engle 1989); the range of set sizes (three to five), while increasing WMC demands on the participant for larger sets, reduces the potential of ceiling effects among participants in the upper end of the WMC distribution. The range of three to five elements per set has been shown to be adequate for most college student populations (Conway et al. 2005; Kane et al. 2004). The order of set sizes was randomized to prevent participants from predicting the number of items (math problems and words) that they would have to address, and from using any strategies that come from knowing the size of the memory set (Conway et al. 2005; Unsworth et al. 2005). Randomizing the set order also reduces proactive interference, which is common in OSPAN tasks of ascending set size (May, Hasher, and Kane 1990).

FIGURE 1

OSPAN TASK LAYOUT



Importantly, the math problems solved during practice trials were used to assess an individual-level time limit for solving the math operations. Thus, when participants were asked to solve a math operation, a (hidden) timer launched when they landed on the page. If they reached their own average solving time plus 2.5 standard deviations (calculated from the practice trials), they received a message saying that they were spending too long on the math operations, and were moved on to the word (Unsworth et al. 2005). This time limit is deemed important to the accurate assessment of WMC: substantial delays may allow participants to rehearse the words, suppressing the accuracy of the OSPAN in assessing WMC (Engle, Cantor, and Carullo 1992).

Finally, after completing the nine OSPAN sets, participants were thanked, debriefed, and paid. Working memory capacity tasks such as the OSPAN create two types of data: processing information (accuracy and time spent on the math problems) and storage information (word recall). However, scoring typically incorporates only the storage information (recall), for two reasons. First, processing scores are usually near the ceiling, as the instructions emphasize math accuracy to ensure that participants are not merely rehearsing the words (Turner and Engle 1989). Secondly, despite the near-ceiling processing scores, this component tends to correlate positively with storage accuracy; participants who recall the most items also answer the most math questions correctly (Kane et al. 2004). Thus,

processing scores are generally set aside in favor of focusing on the recall accuracy (Conway et al. 2005). We follow this convention in reporting results below.

In addition, there are a variety of word recall scoring methods that could be used for OSPAN tasks. However, the most commonly used approach is known as the all-or-nothing load (ANL) scoring, which originated with Ebbinghaus's (1897) work with digit-span tasks to assess individual learning differences (see the web appendix for details and results from all experiments using alternate scoring methods; results remain qualitatively identical in each OSPAN study, regardless of the specific scoring method adopted). The ANL scoring method reflects the sum of correctly recalled words, but includes only the sets in which *all* the words were recalled in correct serial order (Kane et al. 2004). Thus, we calculated each individual's overall OSPAN score by summing the total number of perfectly recalled words (correct word in the correct order). For a participant who correctly recalled three words in a set of three, four in a set of four, and three in a set of five, his OSPAN score would be 7 = (3 + 4 + 0). Scores could range from 0 to 45. If, as we predict, experiencing an identity threat creates a cognitive disruption, we should observe decrements in WMC (lowered OSPAN scores) for athletes experiencing sadness and volunteers experiencing anger. On the other hand, if an identity-affirming experience creates cognitive fluency, we should see enhanced performance (above the neutral emotion conditions) for athletes experiencing anger and volunteers experiencing sadness.

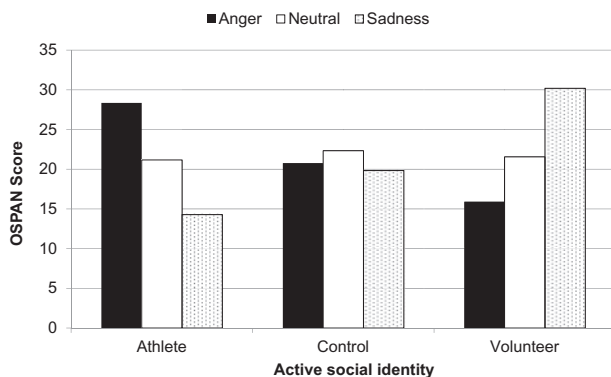
Results

A two-way ANOVA with emotion and identity as predictors was run on the OSPAN score. The predicted two-way interaction was significant ($F(4, 167) = 9.432, p < .001$; see figure 2); no other effects were significant. Athlete-identity participants who experienced sadness had significantly lower OSPAN scores ($M = 14.29$) than those experiencing no emotion ($M = 21.17$; $F(1, 167) = 5.923, p = .016$), or those experiencing anger ($M = 28.35$; $F(1, 167) = 11.220, p < .001$), evidence that experiencing the identity-inconsistent emotion of sadness led to decreases in WMC. As predicted, there was also a facilitation effect; participants with the active athlete identity who experienced anger had higher OSPAN scores than those in the neutral emotion condition ($F(1, 167) = 6.303, p = .013$). Similarly, athletes experiencing anger also had higher WMC ($M = 28.350$) than participants in the control-identity condition who were experiencing anger ($M = 20.765$; $F(1, 167) = 6.789, p < .01$).

Participants with an active volunteer identity showed a similar pattern of results; those experiencing the identity-inconsistent emotion of anger had significantly lower OSPAN scores ($M = 15.91$) than those in the neutral condition ($M = 21.55$; $F(1, 167) = 4.284, p = .040$), or those

FIGURE 2

IDENTITY-CONSISTENT AND -INCONSISTENT EMOTIONS
INFLUENCE WORKING MEMORY CAPACITY



experiencing sadness ($M = 30.190$; $F(1, 167) = 12.604$, $p < .005$). Additionally, volunteers who experienced the identity-consistent emotion of sadness evidenced significantly higher levels of WMC ($M = 30.190$) than those experiencing no emotion ($F(1, 167) = 8.518$, $p < .005$), and compared to participants in the control identity experiencing sadness ($M = 19.842$; $F(1, 167) = 11.429$, $p < .001$), suggesting an identity-consistent emotion fluency effect parallel to that observed in the athlete conditions. In the control-identity condition, there were no significant differences across the three emotion conditions (all $p > .39$).

Discussion

Consistent with our predictions, experiment 1B shows that experiencing an identity-inconsistent emotion leads to cognitive disruptions consistent with experiencing an identity threat. Specifically, using the OSPAN task to assess working memory capacity, we show that participants with an active athlete identity who experienced sadness had substantially lower WMC, while those with an active volunteer identity experiencing anger also had WMC decrements. Importantly, experiment 1B also provides evidence that experiencing an identity-consistent emotion facilitated executive cognitive control: participants experiencing the “correct” identity-consistent negative emotion (athletes + anger; volunteers + sadness) demonstrated significantly higher levels of working memory capacity compared to participants with that active identity who did not experience any emotion (neutral condition). This is consistent with research on the instrumental benefits that emotions can provide (Tamir 2009), and research showing that identity-consistent emotions enhance performance—especially on identity-relevant tasks (Coleman and Williams 2013). Interestingly, rather than the matching of goals and emotion action tendencies (Tamir 2009)

proposed in the instrumental account of emotions, this result suggests that identity-consistent emotions may enhance performance because they provide feelings of “fit” that enable cognitive fluency and potentiate relevant cognitive procedures and actions (Higgins 2000; Oyserman 2009).

While experiments 1A and 1B provide initial evidence for the impact of identity threats and identity-affirming experiences on compensatory consumption because of changes in WMC, they do not test the full conceptual model by directly linking WMC with symbolic self-completion via compensatory consumption. Thus, experiment 2 extends these results by demonstrating the mediating role of WMC on compensatory consumption. In addition, experiment 2 bolsters the generalizability of the work by replicating the effects of identity-consistent and inconsistent emotions on WMC using different identity-emotion pairs.

EXPERIMENT 2: WORKING MEMORY CAPACITY MEDIATES COMPENSATORY CONSUMPTION

Procedure and Design

Experiment 2 was a 3 (identity: environmentalist, volunteer, control) \times 3 (emotion: disgust, sadness, neutral) between-subjects design. Individuals ($N = 523$; 52.8% female, average age = 20.5; range 18–32) from a northeastern university were paid \$10 for participating in multiple studies. This study was collected over two lab sessions; however, controlling for session makes no difference in analyses and thus will not be discussed further.

This experiment was presented as four ostensibly unrelated studies: the identity prime, emotion experience, a working memory capacity task (OSPAN) from experiment 1B, and the same product evaluation task as in experiment 1A. The first component of the experiment involved the identity or control prime, manipulated as in the previous two studies, through a writing task. In the second task, we induced negative emotions by having participants view a series of eight photographs, which had been pretested (see web appendix) to reliably elicit disgust, sadness, or no emotion. The third part was the OSPAN task (Conway et al. 2005; Turner and Engle 1989). Finally, after completing the nine OSPAN sets, participants rated 14 products: three volunteer-relevant, three environmentalist-relevant, and the remaining eight neutral filler products. Participants were then thanked, debriefed, and paid.

Consistent with our conceptual model, we predict that the OSPAN score should mediate the effect of the identity threat on identity-relevant product attitudes.

Results

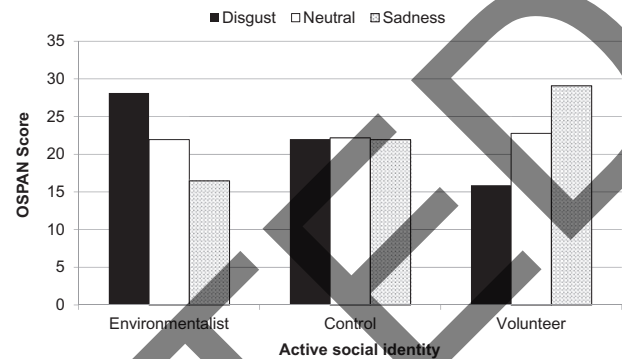
Working Memory Capacity. A two-way ANOVA with emotion and identity as predictors was run on the OSPAN score. The predicted two-way interaction was significant ($F(4, 514) = 21.164, p < .001$; see figure 3); no other effects were significant. Environmentalist-identity participants who experienced sadness had significantly lower OSPAN scores ($M = 16.48$) than those experiencing no emotion ($M = 21.95$; $F(1, 514) = 16.975, p < .001$), or those experiencing disgust ($M = 28.13$; $F(1, 514) = 11.220, p < .001$), evidence that experiencing the identity-inconsistent emotion of sadness led to decreases in WMC. As predicted, there was also a facilitation effect; participants with the active environmentalist identity who experienced disgust had higher OSPAN scores than those in the neutral emotion condition ($F(1, 514) = 5.536, p = .019$). Similarly, environmentalists experiencing disgust also had higher WMC ($M = 28.13$) than participants in the control-identity condition who were experiencing disgust ($M = 22.00$; $F(1, 514) = 5.445, p = .020$).

Participants with an active volunteer identity showed a similar pattern of results; those experiencing the identity-inconsistent emotion of disgust had significantly lower OSPAN scores ($M = 15.87$) than those in the neutral condition ($M = 22.77$; $F(1, 514) = 8.355, p < .005$), or those experiencing sadness ($M = 29.09$; $F(1, 514) = 12.604, p < .001$). Additionally, volunteers who experienced the identity-consistent emotion of sadness evidenced significantly higher levels of WMC ($M = 29.09$) than those experiencing no emotion ($M = 22.77$; $F(1, 514) = 6.518, p < .01$), and compared to control-identity participants experiencing sadness ($M = 21.95$; $F(1, 514) = 10.953, p < .001$), suggesting an identity-consistent emotion fluency effect parallel to that observed in the environmentalist conditions. In the control-identity condition, there were no significant differences across the three emotion conditions (all $p > .71$).

Product Attitudes. A repeated-measures ANOVA was run on the average product evaluations for each product type, with identity and emotion as between-subject predictors, and product type as the within-subject factor. A significant two-way interaction of product type and identity emerged ($F(4, 1028) = 71.722, p < .001$), along with a significant two-way interaction of product type and emotion ($F(4, 1028) = 94.658, p < .001$), but these were subsumed within the predicted three-way interaction of product type, identity, and emotion ($F(8, 1028) = 48.023, p = .04$). This effect replicates earlier studies showing that the effect of emotion and identity on product evaluations depends on the type of product (volunteer-relevant, environmentalist-relevant, filler). To explore this three-way interaction, we examine the effects within each product type below. Note that the evaluations for filler products revealed no

FIGURE 3

IDENTITY-CONSISTENT AND -INCONSISTENT EMOTIONS INFLUENCE WORKING MEMORY CAPACITY



significant main effects or interactions, so they are not discussed further (all $p > .21$).

Environmentalist-identity participants who experienced sadness had significantly more favorable attitudes toward environmentalist-relevant goods ($M = 7.28$) than those experiencing no emotion ($M = 6.14$; $F(1, 514) = 4.895, p < .05$), or those experiencing disgust ($M = 5.53$; $F(1, 514) = 10.991, p < .001$), evidence that experiencing the identity-inconsistent emotion of sadness led to compensatory behavior through more positive attitudes toward identity-relevant products. There were no significant emotion condition effects on attitudes toward environmentally friendly products for the control-identity participants (all $p > .15$). Interestingly, participants with an active volunteer identity who experienced the identity-inconsistent emotion of disgust had significantly lower attitudes toward environmentally friendly products ($M = 4.67$) than individuals in any other condition ($F(1, 514) = 3.928, p < .05$), suggesting that these individuals were avoiding products that may further the experienced identity inconsistency.

Those participants with an active volunteer identity experiencing the identity-inconsistent emotion of disgust had significantly higher attitudes toward volunteer-relevant products ($M = 7.76$) than those in the neutral condition ($M = 4.72$; $F(1, 514) = 12.167, p < .001$), or those experiencing sadness ($M = 5.26$; $F(1, 514) = 7.613, p < .01$). As above, participants with an active environmentalist identity who experienced the identity-inconsistent emotion of sadness had significantly lower attitudes toward environmentally friendly products ($M = 2.95$) than individuals in any other condition ($F(1, 514) = 6.079, p < .05$), suggesting that these individuals were actively avoiding products that may further the experienced identity inconsistency. In the control-identity condition, there were no significant differences across the three emotion conditions or two products (all $p > .3$).

Mediation Analysis. Our theory suggests that individuals who are threatened by experiencing an identity-inconsistent emotion should experience decrements in WMC, leading to more positive attitudes toward identity-relevant products. To test this process, we used PROCESS 2.13 (model 8, Hayes 2013), with 10,000 bootstrapped samples and a 95% confidence interval. As PROCESS cannot analyze multicategorical predictor variables, we recoded the emotion and identity conditions into two sets of two dummy variables.

For environmentalist-relevant products, the indirect effect of emotion and identity on product attitudes, through the OSPAN mediator, was significant ($-.1096$, 95% CI $-.2400$, $-.0007$) as the confidence interval does not include zero. Specifically, the conditional indirect effect of the environmentalist identity when experiencing the identity-inconsistent emotion of sadness was significant ($-.0721$, 95% CI $-.1624$, $-.0026$), suggesting that those individuals who had larger decrements in WMC also had more positive attitudes toward environmentalist-relevant products. Note that this mediation is comparing the environmentalist identity (coded as 1) to all others (coded 0), for the sadness emotion condition (coded as 1) to all others (coded as 0); the mediation pattern does not emerge when comparing the disgust emotion condition ($.0335$, 95% CI $-.0712$, $.1488$), which implies that the facilitation effect observed in the OSPAN results does not carry forward to changes in attitudes.

For volunteer-relevant products, the indirect effect of emotion and identity on product attitudes, through the OSPAN mediator, was significant ($-.1219$, 95% CI $-.2718$, $-.0059$), as the confidence interval does not include zero. Specifically, the conditional indirect effect of the volunteer identity when experiencing the identity-inconsistent emotion of disgust was significant ($-.0853$, 95% CI $-.1969$, $-.0048$), suggesting that those individuals who had larger decrements in WMC also had more positive attitudes toward volunteer-relevant products. As above, this mediation is comparing the volunteer identity (coded as 1) to all others (coded 0), for the disgust emotion condition (coded as 1) to all others (coded as 0); the mediation pattern does not emerge when comparing the sadness emotion condition ($.1054$, 95% CI $-.0629$, $.2424$), suggesting that only those volunteer participants who were threatened by the identity-inconsistent emotion of disgust then elevated their attitudes toward volunteer-relevant products.

Discussion

Experiment 2 replicates and extends earlier results demonstrating that experiencing an identity-inconsistent emotion leads to cognitive disruptions consistent with a self-threat evoked by perceived discrepancies from the identity prototype. Specifically, using the OSPAN task to assess working memory capacity, we show that participants

with an active environmentalist identity who experienced sadness had substantially lower WMC, while those with an active volunteer identity experiencing disgust also had WMC decrements. More simply, consistent with our theory, experiencing identity-inconsistent emotions lowers WMC. Experiment 2 also found further evidence that experiencing an identity-consistent emotion facilitated executive cognitive control: participants experiencing the syntonic identity-consistent emotion (environmentalists-disgust; volunteers-sadness) demonstrated significantly higher levels of WMC compared to participants with that active identity who did not experience any emotion (neutral condition).

This experiment also replicates and extends the earlier results on product attitudes, showing that individuals who experience identity-inconsistent emotions have higher attitudes toward identity-relevant products. This suggests that individuals try to “make up” for the damage the inconsistent emotion creates via compensatory consumption, approaching products that will repair the threatened identity. Further, the analyses demonstrate that WMC mediates compensatory consumption; individuals who are more threatened by the identity-inconsistent emotion (i.e., those who show the greatest decrements in WMC) are those who show larger increases in their attitudes toward identity-relevant products. This result holds across two identities and their concomitant emotions, providing further support for the argument that emotions are central identity components, and when disturbed, have detrimental cognitive implications that drive compensatory behaviors.

In experiments 1A, 1B, and 2, we have demonstrated that experiencing identity-inconsistent negative emotions can lead to reductions in WMC, whereas experiencing identity-consistent negative emotions enhances WMC. These changes in WMC then shape subsequent evaluations of identity-relevant products. In the final study, we examine how global self-affirmation alters the processes caused by experiencing identity-inconsistent negative emotion, or more generally, a self-threat. Typically, prior research on self-affirmation has relied upon affirmations of the global self, rather than affirmations specific to the threatened domain (Shrira and Martin 2005; Steele 1988). This prior research has found that asserting one's personal values can provide a powerful buffer against many psychological perils, particularly in reducing the effects of negative self-evaluations (White et al. 2012) and allowing people to be more open to threatening information (Kim and Gal 2014; Sherman and Cohen 2006). More broadly, global self-affirmation protects individuals from a domain-specific threat (Sherman et al. 2013).

An elimination of compensatory consumption effects, among threatened consumers who have been self-affirmed, has been assumed to indicate that the self-affirmation buffers the self, and reduces the experienced threat. However, it is possible that a global self-affirmation has no effect on

the experience of identity threat, but instead provides a kind of fluid self-completion (Mandel et al. 2017), thereby eliminating the need for such symbolic consumption in the threatened domain. That is, after a self-affirmation manipulation, an athlete feeling sadness may indeed still feel discrepant from the athlete-identity standard (i.e., still experience the threat), but may be able to compensate for the threat by focusing on his accessible, positive global self-worth, rather than seeking out products that will compensate for the self-discrepancy. In other words, does self-affirmation prevent the experience of the threat, or does it provide an alternative means of coping with the experienced threat? In experiment 3, we examine the effects of a global self-affirmation on WMC, providing deeper insight into the process by which self-affirmation exerts its effects. If it is the case that participants afforded the opportunity to self-affirm (at the global level) prior to experiencing an identity-inconsistent negative emotion are protected from the discrepancy inherent in that threatening experience (i.e., do not experience the threat), they should not exhibit any reductions in WMC.

By considering the impact of global self-affirmation on WMC, in experiment 3 we are also able to examine whether self-affirmation can influence improvements in WMC. In experiments 1B and 2, we found that identity-consistent negative emotions facilitate increases in WMC. Thus, in experiment 3, we also examine whether giving participants the opportunity to a self-affirm at the global level will alter the improvements in WMC previously found to emerge from experiencing identity-consistent emotions.

EXPERIMENT 3: THE IMPACT OF SELF-AFFIRMATION ON WORKING MEMORY CAPACITY

Procedure and Design

Experiment 3 was a 1 (identity: athlete) \times 2 (self-affirmation vs. control) \times 3 (emotion: anger, sad, neutral) between-subjects design. Individuals ($N = 508$; 46.8% female, average age = 21.36, age range 18–31) from a southwestern university earned course credit for participating in multiple studies. Note that the final sample size is 459 because of incomplete data or incorrectly entered ID numbers, which prevents matching responses across the four data sets; where possible, partial responses are included.

Participants first completed a self-affirmation task, taken from Shira and Martin (2005). Those in the self-affirmation condition were presented with a list of six values (art/music, business/economics, science/education, family/relationships, social action/helping others, and religion/faith) and asked to select whichever value was most important to them and then write a paragraph explaining (a) why this particular value is important to them, (b) how

they have demonstrated this value in the past, and (c) how they intend to act consistently with this value in the future. Control participants chose their least important value and wrote about how it might be an important value for other people. A coder, blind to conditions and hypotheses, read the self-affirmation responses and indicated which of the six provided values, as well as sports/fitness, the participants chose to write about. The most frequently chosen values centered on family and relationships or upon social action and helping others; there were no systematic differences in the chosen values, whether participants were in the self-affirmation or control task, and the proportion of each value did not differ by condition.

Following the self-affirmation task, participants then completed the identity importance measure (Reed and Bolton 2005), and the identity writing prime as in the previous experiments (Reed 2004). We induced emotions by having participants watch a 2.5 minute movie clip; each clip was pretested (see web appendix) to ensure it reliably induced either anger, sadness, or neutral emotions. Following the emotion experience, participants completed the OSPAN task as in experiments 1B and 2. After completing the OSPAN, participants provided demographic information and were thanked and debriefed.

Results

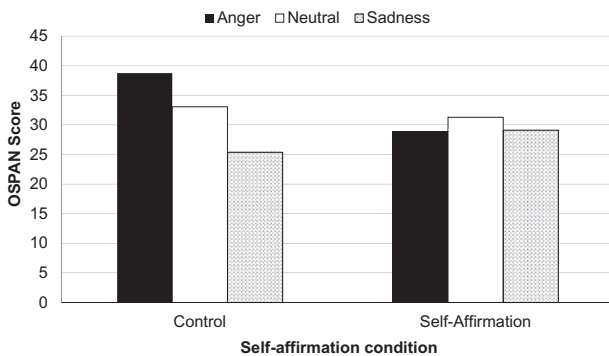
An ANOVA with emotion, self-affirmation, and identity importance as predictors was run on the OSPAN score. Identity importance did not interact with any of the manipulated variables, and was only directionally meaningful as a main effect ($F(1, 453) = 1.645, p = .156$), which appears to be driven by its positively skewed distribution ($M = 4.24, SD = .86$). For parsimony, we do not include identity importance in the following analyses.

A two-way ANOVA with emotion and self-affirmation condition as predictors was run on the OSPAN score. A significant main effect of self-affirmation was found ($F(1, 453) = 6.282, p = .013$), along with a significant effect of emotion ($F(2, 453) = 12.095, p < .001$). Importantly, the two-way interaction was significant ($F(2, 453) = 13.750, p < .001$).

As shown in figure 4, the control condition replicated the results of experiments 1B and 2: participants with an active athlete identity who experienced sadness had significantly lower OSPAN scores ($M = 25.37$) than those experiencing no emotion ($M = 33.07; F(1, 453) = 21.550, p < .001$), or those experiencing anger ($M = 38.76; F(1, 453) = 27.022, p < .001$), evidence that experiencing the identity-inconsistent emotion of sadness led to decreases in WMC. There was also a facilitation effect; participants who experienced anger had higher OSPAN scores than those in the neutral emotion condition ($F(1, 453) = 11.097, p < .001$).

FIGURE 4

SELF-AFFIRMATION PREVENTS REDUCTIONS IN WORKING MEMORY CAPACITY



In the self-affirmation condition, however, the results are markedly different; there are no significant differences across the emotion conditions (all $p > .09$). Specifically, the OSPAN score for participants in the anger condition is lower ($M = 28.81$) than in the neutral condition ($M = 33.06$; $F(1, 453) = 46.469$, $p < .001$), eliminating the facilitation effect of the identity-consistent emotion. Importantly, however, the self-affirmation manipulation did increase the OSPAN score for individuals in the sadness condition ($M = 29.11$) versus in the control condition ($M = 25.37$; $F(1, 453) = 6.793$, $p = .009$). This suggests that the self-affirmation manipulation buffered participants from experiencing the cognitive costs of the identity-inconsistent negative emotions, but also from the cognitive benefits of the identity-consistent negative emotions.

It is important to note that an alternative explanation is that the self-affirmation manipulation may have buffered participants from feeling any emotion. To rule this out, we conducted a separate pretest that followed the same procedure as the present study, but without the OSPAN task. Instead, after watching the film clips, participants rated their current emotional state. This pretest, with 188 participants, confirmed that the self-affirmation manipulation does not eliminate the effect of the emotional videos: participants were equally angry after watching the anger video in the control ($M = 5.103$) and self-affirmation ($M = 5.345$, $p > .4$) conditions, and equally sad after watching the sad video in the control ($M = 5.661$) and self-affirmation ($M = 5.242$, $p > .17$) conditions. In both cases, the only significant effects were of the emotion condition. For full analyses, please see the [web appendix](#).

Discussion

Across experiments, we have demonstrated that identity-inconsistent negative emotions lead to

decrements in working memory capacity, and that this reduction is part of the causal chain prompting compensatory consumption. This final experiment further suggests that the effects of self-affirmation on compensatory consumption serve to buffer against threat and not just to reduce a domain-specific compensatory consumption, as individuals in the self-affirmation conditions no longer experienced the damaging effects of identity-inconsistent negative emotions on WMC. This demonstrates that experience of threat was mitigated by the global self-affirmation task, consistent with processes of fluid compensation (Mandel et al. 2017). Notably, the task mitigated the effect of the identity-consistent emotion as well, suggesting that self-affirmation causes the focal social identity to operate differently.

GENERAL DISCUSSION

Although previous research has provided an abundance of evidence that consumers respond to self-threats by engaging in symbolic self-completion through compensatory consumption (Mandel et al. 2017), the literature has remained fairly silent about the intervening psychological processes that shape the heightened evaluations of identity-relevant products. The current work, therefore, fills an important gap by demonstrating the causal chain connecting identity threats, working memory capacity, and compensatory consumption. Specifically, it shows that identity-inconsistent negative emotions reduce working memory capacity, and that these reductions in WMC mediate compensatory consumption. Because individuals process identity-relevant products more easily than other products after experiencing a self-threat, they evaluate such products more favorably under conditions of reduced WMC.

Across four experiments, we show that identity threats (in the form of identity-inconsistent negative emotions) lead to more favorable attitudes toward identity-relevant products as individuals seek to compensate for the experienced self-discrepancy between their current self-state and the active identity prototype. Even more importantly, the three experiments that utilize the OSPAN task, a dual-processing task that measures working memory capacity (Conway et al. 2005; Turner and Engle 1989), provide compelling evidence demonstrating that identity threats lower WMC. These reductions in WMC drive the more positive evaluations of identity-relevant products.

Notably, the effect of identity-related negative emotions on executive cognitive control documented in our experiments is twofold; not only do identity-inconsistent negative emotions reduce WMC, but identity-consistent negative emotions actually increase it. Thus, as predicted by our conceptual model, it is only when WMC is reduced that we observe the increase in evaluations of identity-relevant

products. More broadly, these findings suggest that identity-consistent experiences may serve to enhance consumers' decision-making and mental control, while identity-inconsistent experiences not only create a threat, but may also harm decision-making by reducing cognitive control.

The WMC enhancement results found in the OSPAN studies for identity-consistent experiences suggest further areas for research on identity fluency effects and overall identity-based potentiation. Working memory capacity is an aspect of executive cognitive control, and represents the ability to focus attention on the task at hand while ignoring task-irrelevant thoughts (Engle 2001). We showed that experiencing an identity-inconsistent negative emotion reduced WMC, presumably because participants divided their cognitive resources between the task at hand and managing the identity-inconsistent emotional experience. This is consistent with research showing that people under stress allocate a portion of their cognitive resources to suppressing unwanted thoughts (Klein and Boals 2001); here, our identity-inconsistent participants may have been suppressing the negative emotion experience itself, or thoughts about their identity discrepancy. Conversely, we found that experiencing an identity-consistent negative emotion actually enhanced WMC above the neutral (no emotion) conditions, convergent with work on action potentiation under conditions of identity "fit" (Oyserman 2009).

The pattern obtained in three different OSPAN experiments suggests that stimulating elements within the active identity's knowledge structure may free up information storage, attentional resources, and even processing capabilities. Research to date has not considered situational aspects that can increase WMC, aside from long-term training in memory tasks and strategies (Baddeley 1992). An exception to this has been expressive writing; individuals writing about personally held values prior to WMC assessment can improve outcomes (Cohen et al. 2006; Klein and Boals 2001). These interventions are similar to the self-affirmation manipulation utilized in experiment 3, where participants discuss a valued and important aspect of their self; this kind of writing appears to buffer them against the anxiety of the self-discrepancy process, leading to increased WMC as seen in experiment 3 (Klein and Boals 2001). To the extent that experiencing an identity-consistent stimulus validates an important part of the self, the results of the three OSPAN studies all suggest that identity consistency may be a buffer against assessment anxiety, evidenced by the enhanced WMC in the identity-consistent negative emotion conditions.

In addition to demonstrating the causal role of WMC in compensatory consumption, by using identity-inconsistent negative emotions as the source of self-threat, the current

work also identifies a new, managerially relevant, source of identity threat. Notably, unlike most threats, negative emotions are a single type of stimulus that can both threaten or affirm, leading to both reductions and enhancements in cognitive processes and WMC in particular. Although previous research has shown discrete negative emotions to be an integral part of the identity prototype, the current work is the first to demonstrate that when a consumer experiences identity-inconsistent negative emotions, it actually threatens the active identity by highlighting a discrepancy between one's current state and the activated identity prototype (Branscombe et al. 1999; Burke 1991; Stryker 2004). Consistent with prior work on symbolic self-completion, because the consumer is feeling an emotion that she *shouldn't* (i.e., one that conflicts with the athlete identity), she tries to symbolically verify her athletic identity through compensatory consumption of athlete-relevant products (Lee and Shrum 2013; Rucker and Galinsky 2013; Wicklund and Gollwitzer 1982). Thus, in addition to providing "what to feel" information, as prior work has demonstrated (Coleman and Williams 2013), the current work shows that identity prototypes can also contain critical information about "what *not* to feel" for successful identity enactment.

As the present studies show that experiencing certain negative emotions can create an identity threat, a natural question could be: Would experiencing an identity-inconsistent *positive* emotion also create feelings of discrepancy? In an unreported pretest study, we tried to elicit identity-inconsistent positive emotions (as in the reported pretest with negative emotions). The results of this pretest suggested that discrete positive emotions are not as cleanly associated with specific social identities; participants generally rated all positive emotions as mildly beneficial to each identity. While some of the results confirm expected identity-consistent positive emotions (e.g., that pride helps athletes), there do not appear to be consistent situations where experiencing a positive emotion actually *harms* an individual's enactment of an identity. While this is just one empirical test, future research could potentially uncover identity-inconsistent positive emotions and their resulting compensatory consumption processes. Even if discrete identity-inconsistent positive emotions prove difficult to identify, future research could examine whether identity-consistent positive emotions might lead to the WMC enhancements observed for identity-consistent negative emotions in the present research.

The existence of identity-relevant emotional prototypes suggests connections with affect valuation theory (AVT; Tsai 2007; Tsai, Knutson, and Fung 2006), which posits that individuals hold culturally based goals regarding their ideal affective states. Because these ideal states often differ from individuals' actual affect, AVT contends that affective states themselves can be goals to pursue. Similarly, the

current work suggests that social identities, by providing clear “what to feel” and “what not to feel” information, may be another source of ideal affective states. The AVT literature has shown that individuals seek to manage discrepancies between actual and ideal affect in a variety of ways, including consumption decisions (i.e., vacations, leisure activities, and music choices) that are more likely to yield ideal affective outcomes. However, in the current research, when one’s experienced emotional state differs from the identity’s ideal, instead of changing the affective state, individuals are instead motivated to verify their *identity* through product choices. In other words, in the present research, individuals use their consumption decisions to bolster their identity rather than change their affective state.

Previous identity research has investigated emotions primarily as a *consequence* of self-threat; individuals who have fallen away from a self-standard fall prey to a host of dejection-related emotions (Carver and Scheier 1988; Heise 1979; Higgins et al. 1986; Stryker 2004). Even one of the few studies testing an intervening process between self-threat and brand consumption proposes that emotion arising from the threat (anxiety) drives brand preference (Angle and Forehand 2016). In contrast, the present work demonstrates that emotions can be an important *source* of self-threat: experiencing an emotion that is inconsistent with the identity prototype can cause an identity threat and prompt compensatory consumption. Specifically, we demonstrate that individuals monitor the fit between their current emotional state and the active identity prototype. When they experience an emotion that contradicts that identity prototype, they make a tacit assessment that identity enactment is failing, and thus engage in self-repair through compensatory consumption.

Identifying negative emotions as a source of self-threat also has substantive implications, given that emotions are more easily manipulated by marketers than other types of threats. Indeed, recent trends in advertising have shifted from humor ruling the airwaves to ad-induced tears, or “sadvertising.” Companies like Procter and Gamble, Google, and even Budweiser have turned to teary ad campaigns in search of more meaningful and authentic content (Fera 2014; NPR 2014). Although these campaigns can, and have, created authentic connections between consumers and brands, the current work suggests that when the negative emotion in the ad is inconsistent with the type of person the consumer is trying to be, it may serve as a source of self-threat.

Future research should continue to probe the psychological processes engaged when consumers encounter an identity threat. While using emotions as identity-threats here offers the ability to examine reductions and enhancements in WMC with a single stimulus, it will also be important for future research to examine the extent to which the

processes documented here occur for nonemotional identity threats. Because of the functionality of emotions and the concomitant cascade of physiological, cognitive, and behavioral responses they trigger (Frijda 1986), emotion-based identity threats may create processes that are qualitatively different than other types of identity threats. Clearly, work on stereotype threats implicates executive cognitive control in the threat process (Schmader and Johns 2003), yet there is but one article in marketing that examines the impact of stereotyping on consumer outcomes (Lee, Kim, and Vohs 2011). Further work could tie these domains together more tightly, as well as examine the mental processes implicated in other types of threats, such as miscategorization (Gal and Wilkie 2010) or distinctiveness (White, Simpson, and Argo 2014).

In sum, the current research examines the internal psychological processes underlying compensatory consumption. While prior work has shown consumers compensate for self-discrepancies through their choice of identity-relevant products, the current findings provide a more in-depth explanation as to why this is the case: identity threats lower WMC, which leads to heightened evaluations of easier-to-process identity-relevant products. It may also be that the changes in executive cognitive control triggered by identity threats have more far-reaching effects, but for now, the current work provides much-needed insight into how WMC is part of the causal chain in the compensatory consumption process. In addition, though past research has primarily suggested that emotions are implicated in identity insofar as they reflect appraisals of success or failure in identity enactment (Burke and Stets 2009), the present research also demonstrates that discrete negative emotions can serve as sources of identity threats, thereby also playing an instrumental role in prompting compensatory consumption. We hope that future work will continue to dig into the underlying drivers of this important consumption process.

DATA COLLECTION INFORMATION

The article is approved by all authors, was conducted in accordance with ethical standards for research and publication, and was reviewed and approved by the appropriate IRB Protocol Committees. The pilot study was completed by paid participants on Amazon Mechanical Turk in December 2016. The data for experiments 1A (September 2016), 1B (February 2014), and 2 (August 2016) were collected under the supervision of the second author at the University of Pennsylvania. The data for experiment 3 was collected under the supervision of the third author at Arizona State University in October 2017. All data was analyzed by the first author.

APPENDIX

IDENTITY-RELEVANT PRODUCTS

Identity	Products
Athlete  Only used in S4	  
Environmentalist	  
Romantic Partner Only used in S4	   
Volunteer	  

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