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Autobiographical recall of mastery experiences is a mechanism of self-affirming under social identity threat

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ABSTRACT

Autobiographical memories are relevant to many areas of psychological functioning. So far, however, there is no evidence whether personal memories can also be instrumental for self-affirmation. We conducted two experiments, varying national identity threat among U.S. Americans recruited through MTurk. In Study 1, participants spontaneously recalled autobiographical memories after being exposed to varying levels of threat. When the threat was identity-relevant, those who spontaneously recalled mastery autobiographical memories had higher collective self-esteem than those who did not. In Study 2, we instructed participants to recall either mastery autobiographical memories or routine memories. When the threat was identity-relevant, collective self-esteem was again higher for mastery recall compared to routine recall, moderated by national identification and self-esteem. We also found a general, self-affirmative effect of autobiographical memories, regardless of threat relevance or recall content. Findings provide a first empirical demonstration that autobiographical recall can enhance self-affirmation in identity threat situations.

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KEYWORDS

Self-affirmation; autobiographical memory; stereotype threat; social identity

Individuals exposed to identity threat resort to various strategies to deal with such a threat. One means of evading threat and maintaining positive self-regard is self-affirmation (Sherman & Cohen, 2006). We propose that, much like reflecting on values one considers central to the self (Sherman & Cohen, 2006), autobiographical recall of mastery events which involves reflecting upon attempts at successfully resolving a challenging personal situation (Thorne, McLean, & Lawrence, 2004), as an example of directive memories (Pillemer, 1998, 2003), could also help instill a sense of competency and worth when faced with threat. Autobiographical recall has shown beneficial effects in various domains, such as memory (Baddeley, 1988; Bluck, 2009), self-enhancement (Wilson, Gunn, & Ross, 2009; Wilson & Ross, 2003), maintaining social bonds (Alea & Bluck, 2003; Neisser, 1988; Nelson, 1993), resilience and positive affect (Philippe, Lecours, & Beaulieu-Pelletier, 2009), intimacy in relationships (Alea & Bluck, 2007), expressing empathy (Bluck, Alea, Habermas, & Rubin, 2005) and solving problems (Cohen, 1998). Yet, the role of autobiographical recall in self-affirmation has not been studied; we, therefore, set out to assess whether directive autobiographical memories and specifically mastery memories can also be used as a source of self-affirmation in a context of social identity threat.

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Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/vsoc.
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Supplemental data for this article can be accessed here.

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Autobiographical memories have been associated with three broad functions: self, social, and directive (Bluck, 2003). The self-function contributes to continuity of the self, preserving a sense of being a coherent person over time as well as regulating emotions (Conway, 2005; Robinson, 1986). Within the self-function, autobiographical memories also serve the self-enhancement motive of maintaining an overall favorable view of the self (Wilson et al., 2009; Wilson & Ross, 2003), which may be particularly important in adverse contexts. Autobiographical recall also fosters the development, strengthening, and maintenance of social bonds (Alea & Bluck, 2003; Neisser, 1988; Nelson, 1993), intimacy in relationship (Alea & Bluck, 2007) and empathy where people use their own experiences of the world to understand others and better predict their behavior (Bluck et al., 2005; Pohl, Bender, & Lachmann, 2005; Robinson & Swanson, 1990). Of these functions, the directive function is the most likely candidate to be instrumental for self-affirmation, as autobiographical memories are used to guide present and future thought and behavior (Bluck et al., 2005) and solve current problems (Cohen, 1998). For example, in a study among couples, the directive function (problem-solving, future planning) was most apparent when the conversations were about conflicts (Pasupathi, Lucas, & Coombs, 2002).

Considering the usefulness of directive memories in adverse contexts, and given that social identity threat is an adverse situation, we, therefore, suggest that recalling a directive autobiographical memory can be an act of self-affirmation. For example, one might recall a significant message from an important person as a source of present guidance (Pillemer, 1998), or a past failure may come as a motivator to a current problem (Pillemer, 2003). Similarly, and of specific relevance to the current study, the recall of a past mastery event in which a difficult situation is successfully resolved (mastery recall) can provide guidance to address a problem in the present (Pillemer, 2003). Mastery memories involve personal narratives centered on attempts at successfully resolving a challenging event and should reflect effortful striving and direction towards a resolution (e.g., quitting an unsatisfying job) (Thorne et al., 2004). In fact, mastery experiences have been classified as performance accomplishment sources of self-efficacy expectations, where repeated successes in addressing a given adversity contribute to decreased defensive reactions and increased sense of competency (Bandura, 1977). This is very much in line with self-affirmation theory (Steele, 1988), where individuals are motivated to maintain self-worth when faced with a threat by differentiating a specific threat from the global view of oneself (Sherman & Cohen, 2006; Sherman et al., 2014).

**From memories to self-affirmation**

On a daily basis, people face challenges to their self-concept that could compromise self-integrity or the view of oneself as worthy and adequate (Sherman & Cohen, 2006; Steele, 1988). These can range from exposure to health-promoting messages that are at odds with individual’s current behaviors such as smoking and alcohol consumption (Epton, Harris, Kane, van Koningsbruggen, & Sheeran, 2015; Sweeney & Moyer, 2015), to being subject to prejudice because of a social group belonging (Sherman et al., 2014). Given that people are motivated to maintain a positive view of the self, such threatening messages can trigger reactions that are often defensive such as rationalization and denial (Sherman, 2013). Self-affirmation proposes that a less defensive means of maintaining self-worth and buffering against the threat to a life domain (e.g., failure on an academic task) is to reflect upon a life domain such as religion, family, or social relations where one feels competent (e.g., being a good parent). Self-affirmation provides people with an indirect means of adapting to a threat by enhancing the self’s resources and placing the threat within a larger context, a broader view of the self that emphasizes a sense of being good and valued (Sherman & Cohen, 2006; Sherman et al., 2014). Self-affirmation is therefore used as an intervention to deal with the adverse consequences of social identity threat (e.g., race, nationality, gender) (Cook, Purdie-Vaughns, Garcia, & Cohen, 2012; Layous et al., 2017; Sherman et al., 2014). For instance, self-affirmation is successfully applied in educational settings to reduce the achievement gap among low achieving Black and Hispanic students (Protzko & Aronson, 2016). Findings support the efficacy of self-affirmation in overcoming...
identity threat, improving academic performance and increasing a sense of belonging (Cohen & Sherman, 2014; Layous et al., 2017). Typically, self-affirmation is studied through value affirmation, which allows one to reflect upon an unthreatened, valued element of the self as a means to restore or preserve a sense of overall self-worth (Cohen & Sherman, 2014; Cook et al., 2012). The content that participants produce in value affirmation exercises has been analyzed to identify active ingredients driving the effects, and themes of social belonging (Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013), valued relationships and spirituality have been identified (Creswell et al., 2007).

To our knowledge, autobiographical memories have so far not been examined within the context of self-affirmation. Autobiographical memories are a useful resource for the self (Robinson, 1986), specifically in maintaining a sense of continuity (self-function), strengthening social relationships (social function) and guiding future behaviors by distilling valuable lessons from past experiences (directive function) (Bluck, 2003; Bluck et al., 2005; McLean, 2008). Within the directive function (Pillemer, 1998, 2003), we specifically focus on mastery recall – where one reflects upon a personally relevant memory about overcoming obstacles. We advance this as a mechanism of affirmation in the context of social identity threat given that mastery experiences have been associated with increased self-efficacy (Bandura, 1977) and resolving challenging situations (Thorne et al., 2004). The current work also builds on findings in relation to the identification of themes that underlie value affirmation (Creswell et al., 2007). Specifically, a mastery memory may be recalled in the service of current goals of the working self (Conway, 2005; Conway & Pleydell-Pearce, 2000), and thus could also be recalled particularly to maintain self-worth in the face of threat, which is one of the pervasive goals that drives individuals (Steele, 1988). For instance, a single mother may draw on her specific experiences of managing a full-time job and raising three children. Remembering having overcome such adversity may be a well of strength and an important source of self-affirmation (Cohen & Sherman, 2014). Reminiscing about such mastery events may offer valuable information to the individual when dealing with a problem situation, thus serving as directives for the present or future in the face of adverse events (Wong & Watt, 1991). Such recollections can be a rather automatic means of adapting to a threatening situation (Pillemer, 2003) and may thus constitute a spontaneous mechanism of self-affirmation.

The adverse impact of social identity threat

Given that directive memories are most relevant when dealing with adversity, it is worth examining whether they could also be instrumental when social identity threat is triggered, that is when a person perceives the group he/she belongs to is at risk of being devalued (Steele, Spencer, & Aronson, 2002). This devaluation activates strategies aimed at restoring self-worth (Branscombe, Ellemers, Spears, & Doosje, 1999), specifically among those for whom the threatened group is highly relevant (MCQueen & Klein, 2006; Schmader, Block, & Lickel, 2015). For instance, national identity threat among US American students reduced collective self-esteem. To restore (collective) self-worth, students engaged in greater outgroup derogation (Branscombe & Wann, 1994). Engaging in outgroup derogation is a direct and defensive psychological adaptation to identity threat which is in contrast with self-affirmation where adaptation is indirect (Sherman & Cohen, 2006).

For the present study, we chose to assess collective self-esteem as an indicator of collective self-worth to increase the fit with the threatened domain of identity (i.e., the group Rubin & Hewstone, 1998). Collective self-esteem, that is, the perceived value and relevance an individual associates with being a member of a specific collective or group, has been shown to decrease as a function of social identity threat (Ellemers, Kortekaas, & Ouwerkerk, 1999), which in turn motivates strategies aimed at restoring it (e.g., Branscombe & Wann, 1994). One such strategy could be a recall of mastery events as specific directives for a current problem situation.
Present study

Autobiographical memories have not been investigated as possible self-affirmation resources, but research has supported their use in domains as different as maintaining and fortifying social relationships, directing future behavior and providing a sense of continuity and stability to the self (Bluck et al., 2005). Particularly, the use of autobiographical recall in directing future behavior is of interest, where mastery memories could serve as a guide to a current course of action (Bluck et al., 2005; Pillemer, 2003; Prebble, Addis, & Tippett, 2013). We investigated mastery recall as a specific mechanism of self-affirmation in a context of categorization threat (Branscombe et al., 1999).

Categorization threat is a class of social identity threat where a stereotypical group characteristic is ascribed to a group of people in inter-group scenarios (Branscombe, Ellemers, et al., 1999). Resistance to such threat may be amplified if judged as irrelevant or illegitimate (varied in the present study) in the context it is used (Ellemers, 1993). For our study, we devised a vignette in which we categorically labeled group members in an undesirable manner: we refer to all U.S Americans as overweight (i.e., categorization threat) and support the claim with fictitious statistics. Since directive memories are most relevant in a problem-solving context (Pillemer, 2001), we were particularly interested in the role of mastery recall in self-affirming under national identity threat. We used a threat to the U.S. national identity as U.S Americans have been shown to be high on national pride (Evans & Kelley, 2002) and therefore a threat to this category would likely be relevant. In the first study, we assessed whether people exposed to a national identity threat would recall mastery memories spontaneously, and in turn boost collective self-esteem. In the second study, we instructed participants to recall a mastery event to investigate whether mastery, as opposed to routine memories, can serve as a means of self-affirmation. We also tested mastery recall as a coping agent and a preventing agent of threat as two plausible mechanisms for self-affirmation (see Study 2).

Study 1

In Study 1, we instructed participants to engage in spontaneous recall after exposing them to conditions varying in threat and levels of identity relevance: The threat was either depicted as being related to an important aspect of an individual’s identity (i.e., identity-relevant condition), as being unrelated to the participants’ identity (i.e., identity-irrelevant condition) or there was no threat whatsoever (neutral condition). Our aim was to assess whether mastery memories emerge in these spontaneous recalls as a means of attenuating threat and contributing to collective self-esteem. We used an adaptation of a coding scheme for self-defining memories (Thorne et al., 2004), to distinguish mastery and non-mastery recall. Drawing upon the directive function of autobiographical recall (Pillemer, 2003), we expected participants exposed to a national identity-relevant threat, who also recall mastery autobiographical memories to have higher collective self-esteem compared to participants who recall non-mastery memories (H1). We did not expect differences in collective self-esteem based on mastery versus non-mastery memories across the identity-irrelevant threat and neutral conditions (H2). Given that group identification and global self-esteem have been suggested as moderators in the previous work on social identity threat (MCQueen & Klein, 2006; Schmader et al., 2015), it was important to account for them in the present research. However, due to the open-ended nature of the recall task, it was unclear whether it would have been possible to reach sufficient cell sizes for a moderation analysis. We, therefore, set out to account for national identification and self-esteem as covariates.

Method

Participants
We recruited a total of 558 U.S. American adults through Amazon Mechanical Turk. We excluded participants who were not U.S. citizens, had Austrian heritage (to avoid triggering ethnic identity threat
in the irrelevant condition), or who have visited or lived in Austria (to avoid reflections/refutations on the irrelevant threat vignette based on exposure to the group). Sociodemographic characteristics of the sample are presented in Tables 1 and 2. We calculated the required sample size using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) where to detect a medium effect size ($f = .25$) with a 5% probability of error at a 95% CI, we needed a minimum of 279 participants. We targeted 850 participants to account for dropouts and non-eligible participants accessing the study link ($N = 292$) as well as to oversample for mastery memories.

### Procedure

After obtaining approval from the Ethics Review Board (reference EC-2014.30), we prepared the experiment on Qualtrics and set up its link on Amazon Mechanical Turk (MTurk). We informed participants that the study was “exploring different attitudes among many different groups of people and many different countries”. After reading the consent form, participants had to indicate whether they agreed to proceed with the study. Then, we asked questions intended at assessing three inclusion/exclusion criteria. First, we asked if participants were indeed U.S citizens (to ensure that the national identity threat is indeed relevant to a valued aspect of the self), if they had Austrian heritage, and if they had ever lived in or visited Austria (to ensure that participants do not react strongly to our identity-irrelevant threat condition referring to Austrians). Next, we administered measures of group identification (national identification) and global self-esteem in counterbalanced order, followed by randomly assigning participants to one of three experimental conditions with varying levels of threat relevance. In the national identity-relevant threat condition, we presented a short vignette describing all U.S Americans as overweight. We used the same vignette targeting another nationality (Austrian) in the national identity-irrelevant threat condition and the neutral condition featured a vignette describing chairs (see experimental manipulation for details). After reading one of the three vignettes, we asked manipulation check questions (see item one of supplementary material) where participants rated the author of the presented vignette on his/her attitudes and his/her feelings on the group portrayed. We did this to assess whether vignettes were perceived in the intended manner (adapted from Phinney, Chavira, & Tate, 1993). As an outcome, we assessed the extent to which participants draw a sense of value and worth from their national group (collective self-esteem). Last, in a demographic form, participants provided information, such

### Table 1. Individual demographic characteristics as a percentage of the sample ($N = 558$).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>265 (47.5)</td>
</tr>
<tr>
<td>Female</td>
<td>292 (52.3)</td>
</tr>
<tr>
<td>Unknown</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>Birth country</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>535 (95.9)</td>
</tr>
<tr>
<td>Other</td>
<td>21 (3.8)</td>
</tr>
<tr>
<td>Unknown</td>
<td>2 (0.4)</td>
</tr>
<tr>
<td>Highest education level</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>4 (0.7)</td>
</tr>
<tr>
<td>Secondary</td>
<td>150 (26.9)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>401 (71.9)</td>
</tr>
<tr>
<td>Unknown</td>
<td>3 (0.5)</td>
</tr>
</tbody>
</table>

### Table 2. Individual demographic characteristics.

<table>
<thead>
<tr>
<th>N</th>
<th>M (SD)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>550</td>
<td>32.25 (12.12)</td>
<td>17</td>
</tr>
<tr>
<td>BMI</td>
<td>552</td>
<td>26.88 (6.47)</td>
<td>8.99</td>
</tr>
</tbody>
</table>
as gender and age. The experiment took approximately 25 to 30 min to complete, and each participant was paid 0.40 U.S. Dollars.

**Measures**

We measured group identification by using a variant of the six-item revised Multigroup Ethnic Identity Measure (MEIM-R) (Phinney & Ong, 2007), where national identity was assessed rather than ethnic identity. Items addressed group commitment, exploration and belonging rated on a 5-point Likert type scale ranging from “strongly agree” to “strongly disagree” (α = .86). To assess global self-esteem, we used the Rosenberg Self-Esteem (RSE) scale (Rosenberg, 1965) comprised of 10 items (e.g., “I am able to do things as well as most other people”) rated on a 4-point Likert-type scale ranging from 1 “strongly disagree” to 4 “strongly agree” (α = .90). We administered the 16-item Collective Self-Esteem Scale (CSES) (Luhtanen & Crocker, 1992), rated on a 7-point Likert-type scale as an outcome measure. We adapted items to stress that the social group being assessed is one's national group (e.g., “I am a worthy member of the national group I belong to”). The scale yields a total score and four subscale scores addressing membership esteem, private esteem, public esteem, and importance to identity. For the purposes of the present study, we used the total score (α = .88).

**Experimental manipulation**

We used categorization threat (Branscombe, Ellemers, et al., 1999) to construct three short experimental vignettes aimed at manipulating threat relevance. Categorization threat involves ascribing a stereotypical characteristic (negative or positive) to a group of people (Branscombe, Ellemers, et al., 1999). We used vignettes specifically constructed for the purposes of the current study as opposed to adapting task instructions of previous work since our outcome measure was self-reported collective self-esteem and not a performance index (e.g., a Math test – Nguyen & Ryan, 2008). We applied a blatant threat activating cue since we did not specifically target high identifiers and, in such instances, it may be necessary to increase the salience of the threat for it to be functional (see Cadinu, Maass, Frigerio, Impagliazzo, & Latinotti, 2003; Keller, 2002). We used the “fat US American” stereotype to construct a short description with an identity-relevant target group (US American). We selected this stereotype based on the high prevalence of obesity in the United States relative to other countries, with an estimated one-third of both men and women being obese (Ng et al., 2014) (See item two of supplementary material). We then developed an identity-irrelevant variant (Austrian) that differed only in the country designator (i.e., “Americans/Austrians are known to be fat”). We devised a neutral condition, featuring a description of chairs “A chair is a piece of furniture with a raised surface used to sit on...”. We kept word count constant across the three vignettes (see Appendix A for full script).

**Autobiographical memory coding**

We used two methods for coding autobiographical memories. First, we applied text analysis using Linguistic Inquiry and Word Count (LIWC) (Pennebaker, Boyd, Jordan, & Blackburn, 2015). LIWC is a text analysis program that taps into structural, emotional, and cognitive components of written texts. To disentangle the effects of emotional valence of the memory from the recall of a directive memory, we assessed whether positive and negative affect differed across threat conditions. Further, all autobiographical memory entries were thematically coded per narrative (Thorne & McLean, 2001). We specifically coded for the presence of mastery themes and coded all entries as no mastery that involved themes of relationship, recreational experiences, life-threatening event, and guilt/shame. We coded memories that emphasized the narratives of one’s own or family/group’s effortful attempts at accomplishment as mastery memories (Thorne & McLean, 2001).
**Results**

**Data preparation**

We checked for the eligibility of autobiographical memory entries using a committee approach. We excluded entries that involved evaluative statements related to the experimental vignettes and future plans that did not connect to a recall of a past event \((N = 62)\). Next, two independent coders coded the entries \((N = 496; 52.2\% \text{ female and } 47.6\% \text{ male})\) for mastery (e.g., “…I studied very hard for the exam, but the final problem took longer because there was a trick to it. I realized the trick to it at the last minute and handed the exam in, feeling confident”) versus non-mastery experiences (e.g., “I have been playing with my kids, watching Netflix and browsing Facebook today. It’s been a calm day for the most part”) using the coding manual for self-defining events by Thorne and McLean (2001) and in keeping with the directive function of autobiographical memories (Pillemer, 2003). There was a substantial agreement between the two sets of codes as indicated by Cohen’s \(\kappa = .93, p < .01\) (Viera & Garrett, 2005). We detail code frequencies for the overall sample and per experimental condition in Table 3. We also checked whether positive and negative affect word frequencies differed across threat conditions, and found that positive affect was different across the threat groups \((F(2, 493) = 4.22, MSE = 8.03, p = .01, \eta^2 = .02)\) such that compared to the identity irrelevant condition, participants in the neutral condition scored significantly higher \((p = .01)\). We did not find differences in positive affect across the threat-relevant and threat-irrelevant conditions \((p > .05)\).

**Manipulation check.** Ratings of perceived vignette author attitudes and feelings were significantly different and in the expected direction across threat relevance and neutral conditions \((F(2, 493) = 399.12, MSE = .47, p = .00, \eta^2 = .62\) and \(F(2, 493) = 403.62, MSE = .44, p = .00, \eta^2 = .62)\). Both the threat-relevant and threat-irrelevant conditions were rated as equally negative, and the neutral condition was rated as significantly more positive compared to the threat conditions \((p < .05\) for all).

**Hypotheses tests**

We expected collective self-esteem to be higher for participants who recalled a mastery themed autobiographical memory when faced with identity threat compared to those recalling a non-mastery themed autobiographical memory (H1). We did not expect to find a similar difference for participants under the identity-irrelevant threat and neutral conditions (H2). We tested H1 and H2 using a 2 (Mastery vs. non-Mastery) by 3 (identity-relevant, identity-irrelevant, and neutral) factorial ANCOVA with collective self-esteem as the outcome and national identification and global self-esteem as covariates.

Global self-esteem \((b = .48, t(482) = 7.31, p = .00, \eta^2 = .10)\) and national identification strength \((b = .60, t (482) = 170.53, p = .00, \eta^2 = .30)\) emerged as significant covariates with positive (unstandardized) beta coefficients.

The main effects for recall theme \((F(1, 482) = 3.91, MSE = .567, p = .05, \eta^2 = .01)\) and threat relevance \((F(2, 482) = 2.96, MSE = .567, p = .05, \eta^2 = .01)\) were significant with small effect sizes, but their interaction effect was not \((F(2, 482) = 1.09, MSE = .567, p = .34, \eta^2 = .00)\). On average, participants recalling mastery themed autobiographical memories \((M = 4.87, SD = .91)\) had higher collective self-esteem compared to participants recalling non-mastery themed autobiographical memories \((M = 4.80, SD = .97)\). Follow-up pairwise comparisons using Bonferroni correction showed that collective self-esteem was significantly higher for participants in the neutral condition.

<table>
<thead>
<tr>
<th>Table 3. Frequency of extracted themes per experimental condition (Thorne &amp; McLean, 2001).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity-relevant</td>
</tr>
<tr>
<td>(N) (percentage)</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Mastery</td>
</tr>
<tr>
<td>Non-mastery</td>
</tr>
</tbody>
</table>
(M = 4.93, SD = .94) than for participants in the identity-irrelevant condition (M = 4.69, SD = .93; p = .04). No differences emerged between the identity-relevant (M = 4.83, SD = 1.00) and irrelevant threat conditions and the identity-relevant threat and neutral condition (p > .05).

While we have sufficient power for the experimental design as a whole as the GPower 3.1 calculations indicate (Faul et al., 2009, 2007), power is lower when considering the uneven distribution of mastery/non-mastery experiences across cells. To assess whether the absence of a significant interaction effect is due to low power, we conducted univariate analyses of covariance per threat condition with collective self-esteem as the dependent variable and autobiographical memory theme (mastery vs. non-mastery) as the independent variable controlling for global self-esteem and national identification. In line with our expectations, results indicated a significant difference in collective self-esteem between mastery and non-mastery recalls for the identity-relevant condition (F(1, 163) = 5.25, MSE = .53, p = .02, \( \eta^2 = .03 \)), where participants recalling a mastery themed autobiographical memory (M = 5.04, SD = .91) had significantly higher collective self-esteem than those recalling a non-mastery themed autobiographical memory (M = 4.78, SD = 1.02). No significant differences between mastery and non-mastery recalls emerged in the identity-irrelevant (F(1, 158) = .02, MSE = .61, p = .89, \( \eta^2 = .00 \)) or neutral conditions (F(1, 163) = 1.57, MSE = .55, p = .21, \( \eta^2 = .01 \)) (Table 4).

**Discussion**

In line with our expectations, participants under national identity-relevant threat who engaged in spontaneous mastery recall had higher collective self-esteem than when recalling a non-mastery memory. We observed this effect in the identity-relevant condition alone. The thematic coding of the free recalls yielded unequal cell sizes where mastery themed autobiographical memories comprised roughly a quarter of the total theme codes. This resulted in low power. To address this in our second study, we specifically instructed participants to recall mastery events.

Although our findings point to a potential coping mechanism of autobiographical recall in identity management, the preventing mechanism (affirmation before threat) (e.g., Sherman et al., 2014) that was not tested in Study 1 is equally plausible. Therefore, we investigate this mechanism by administering the threat before and after affirmation through recalls in Study 2.

**Study 2**

In Study 2, we elicited memories of mastery as a means of self-affirmation under identity threat conditions. We instructed participants to recall and report on a difficult situation they encountered and how they overcame it (mastery recall), contrasted with memories of participants’ daily morning routine. We expect participants exposed to an identity-relevant threat, who were also instructed to recall a mastery memory, to have higher collective self-esteem compared to participants instructed to recall a routine memory (H1). We do not expect the same findings for participants in the identity-irrelevant threat condition, since the threat content, albeit negative, is not relevant to their group identity. We also do not expect collective self-esteem to vary across recall types in the neutral condition (H2).
Because self-affirmation can function as a preventive (affirmation before threat) and coping mechanism (affirmation after threat) (MCQueen & Klein, 2006), we tested both possibilities (RQ1). Autobiographical recall could serve as the mechanism through which self-worth is maintained after the presentation of a threatening message, by accessing autobiographical knowledge of a non-threatened aspect of one’s identity, here, an autobiographical memory of mastery (Aronson, Cohen, & Nail, 1999; Sherman & Cohen, 2006; Steele, 1988), hence a coping agent of threat. Autobiographical memories could also prevent threat-induced harm via the same mechanism. Both mechanisms are plausible on the basis of the self-affirmation literature (Steele, 1988).

We found both national identification strength and global self-esteem to be significant covariates in Study 1. Research has pointed to differences in reactions to threat depending on the strength of group identification where low identifiers show resistance to such threats compared to high identifiers (Armenta, 2010; McCoy & Major, 2003; Schmader et al., 2015; Spears, Doosje, & Ellemers, 1997); therefore, we test the strength of identification as a moderator in the present study. We test this moderation separately for affirmation before administration of threat and affirmation after administration of threat. We expect national identity strength to moderate the relationship between recall type and collective self-esteem regardless of recall order, within the identity threat-relevant condition. Specifically, we expect participants who recall a mastery memory (as opposed to a routine memory) and who are high on national identity strength, to score higher on collective self-esteem (H3).

We also inspect the role of global self-esteem as a moderator of the relationship between threat and self-affirmation (RQ2). Findings on the mechanism through which self-esteem affects self-affirmation so far have been inconclusive. Some point to no differences in self-affirmation as a function of self-esteem, while others report greater attitude change and perceived stress following self-affirmation among individuals with low self-esteem (MCQueen & Klein, 2006).

### Table 5. Individual demographic characteristics as a percentage of the sample (N = 788).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>380 (48.2)</td>
</tr>
<tr>
<td>Female</td>
<td>402 (51.0)</td>
</tr>
<tr>
<td>Unknown</td>
<td>6 (0.8)</td>
</tr>
<tr>
<td>Birth country</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>750 (95.2)</td>
</tr>
<tr>
<td>Other</td>
<td>31 (3.9)</td>
</tr>
<tr>
<td>Unknown</td>
<td>7 (0.9)</td>
</tr>
<tr>
<td>Highest education level</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>4 (0.5)</td>
</tr>
<tr>
<td>Secondary</td>
<td>227 (28.8)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>545 (69.2)</td>
</tr>
<tr>
<td>Unknown</td>
<td>12 (1.5)</td>
</tr>
</tbody>
</table>

### Table 6. Individual demographic characteristics.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M (SD)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>779</td>
<td>34.37 (13.03)</td>
<td>17</td>
<td>77</td>
</tr>
<tr>
<td>BMIa</td>
<td>770</td>
<td>26.78 (6.67)</td>
<td>4.13</td>
<td>62.17</td>
</tr>
</tbody>
</table>

aSeven univariate outliers significant at the 99.99th confidence interval were found. These were retained as we tested the model with and without the outliers, and the pattern of results remained the same.
Method

Participants
We recruited 788 U.S. American adults through MTurk. We excluded participants who were not U.S. citizens, had Austrian heritage or had visited/lived in Austria (as in Study 1). Tables 5 and 6. We calculated the sample size using G*Power 3.1 (Faul et al., 2009, 2007). To detect a medium effect size ($f = .25$) with a 5% probability of error at a 95% CI, we needed a minimum total sample size of 400. We targeted 1200 participants to account for dropouts, and non-eligible participants accessing the study link. We retained 788 after excluding participants who were not eligible ($N = 241$), and participants who had quit before completing the dependent measure ($N= 162$).

Procedure and measures
We prepared Study 2 using Qualtrics and set up a corresponding link on MTurk. After obtaining consent, participants completed the RSE as a measure of global self-esteem ($\alpha = .92$) as well as a variant of the MEIM-R assessing national identification ($\alpha = .91$) both assessed as moderators. We then randomly assigned participants to one of 12 experimental conditions, with three levels of threat relevance manipulated using the vignettes in Study 1 (identity-relevant, identity-irrelevant, vs. a neutral condition), two levels of recall instruction (mastery vs. routine), and two levels of recall order (before vs. after threat). Next, we asked participants to rate the author of the presented vignette on his/her attitudes and his/her feelings on the group portrayed as a manipulation check (Phinney et al., 1993). We then had participants complete the Collective Self Esteem Scale (CSES) (Luhtanen & Crocker, 1992) as an assessment of group esteem ($\alpha = .83$) and a demographic form. Finally, we asked six questions assessing participant reactivity (Chartrand & Bargh, 1999). We paid each participant a sum of 0.40 U.S. Dollars for completing the experiment (~45 min).

Experimental manipulation
We manipulated threat relevance (identity-relevant, identity-irrelevant, and neutral), recall type (mastery and routine) and recall order (before and after threat). As in Study 1, we applied the threat vignettes constructed around the “Fat American” stereotype (see Appendix A for full script).

To assess the role of autobiographical memory as an identity affirmation tool, we elicited routine morning memories and mastery memories, which were not necessarily related to the threat content as an indirect means of identity affirmation, as postulated by affirmation theory (Aronson et al., 1999). We instructed participants to recall a difficult situation and how they overcame it. Both elements were necessary to qualify as a mastery memory (e.g., “In Middle School I was bullied and teased and often had bad days. To overcome this bullying and feeling of depression my mom told me that I needed to start finding the positives of the day. Also, to stand up for myself. Once I started doing what my mom said life improved”). As a comparison condition, we instructed participants to recall and write down their morning routine (see Appendix B) which would not qualify as a specific event that can be used as a directive (e.g., “I wake up. Then I get out of bed and brush my teeth. Next thing I do is feed my cats. Then I take a shower and get dressed for work. I leave the house once I’m ready and drive to work. Then I get to work and say good morning to everyone and sign onto my computer and listen to my voice mail messages. Then I check my emails. After that, I start working on my daily work assignments”). As in Study 1, we also sought to address the effects of emotional valence of recalling a directive memory, by comparing the frequency of positive and negative affect words across experimental conditions using LIWC (Pennebaker et al., 2015).

To test whether mastery recall is a coping versus preventing agent of threat (Aronson et al., 1999; Steele, 1988), we instructed participants to either recall a mastery or routine autobiographical memory before the threat (preventing effect), after the threat (coping effect).
Results

Data preparation

We excluded autobiographical memories in the mastery recall condition if they were related to the threat content (e.g., reflections on the threat and comments on the accuracy of the content) or did not contain a mastery element (Thorne & McLean, 2001). We used a more specific criterion where only memories with a resolution for a difficult situation were retained, in line with previous work on the directive function of autobiographical recall (Pillemer, 2001, 2003). We disregarded routine recalls if they were not neutral and not a routine. Four independent coders applied the coding scheme. We split autobiographical entries across three coders such that each coder examined around 260 text entries. Following this phase, the first author reviewed and coded all 788 entries. Cohen’s κ showed substantial agreement between the two sets of codes, κ = .74, p < .01 (Viera & Garrett, 2005). In total, we excluded memories from 65 participants leaving a total sample size of 723 (51.7% female; 47.5% male).

Manipulation check. We tested for differences across the identity-relevant, identity-irrelevant, and neutral experimental conditions through analyses of variance (ANOVA). We found that participant ratings of both feelings and attitudes within the three threat conditions were significantly different across recall type and recall order. In 11 of the 12 experimental conditions, participants exposed to the identity-relevant and identity-irrelevant threat conditions rated author attitude and feelings as equally negative (p > .05 for all) and significantly more negative than the neutral condition (p < .01 for all) (See item three of the supplementary material). It was only within routine recall after threat exposure that ratings on the identity-relevant threat and irrelevant threat vignettes significantly differed. Participants rated the identity-relevant condition as more negative compared to the identity-irrelevant condition (p < .001 for both). The negativity rating, however, was in line with the content of the vignette and rated as significantly more negative than the neutral condition (p < .05).

Using a simple one-way analysis of variance, we compared LIWC categories of positive and negative emotions across threat relevance and found significant differences, indicating that the valence of memories that participants reported across threat conditions was similar (p > .05 for all).

Hypotheses tests

In a 3 × 2 x 2 factorial ANCOVA followed by simple effects analysis (Tabachnick & Fidell, 2014), we examined differences on collective self-esteem across threat, recall type, and recall order Tables 7 and 8. To minimize bias, we applied a more restricted alpha criterion (p < .01) and examined bootstrapped confidence intervals, estimated means, and post-hoc tests with the Bonferroni correction.

**Table 7. Collective self-esteem per threat relevance, recall type, and recall order.**

<table>
<thead>
<tr>
<th>Threat relevance</th>
<th>N</th>
<th>M (SD)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity-relevant</td>
<td>243</td>
<td>4.55 (0.84)</td>
<td>.00</td>
</tr>
<tr>
<td>Identity-irrelevant</td>
<td>239</td>
<td>4.40 (0.68)</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td>240</td>
<td>4.70 (0.93)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall type</th>
<th>N</th>
<th>M (SD)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine recall</td>
<td>396</td>
<td>4.51 (0.80)</td>
<td>.10</td>
</tr>
<tr>
<td>Mastery recall</td>
<td>326</td>
<td>4.60 (0.87)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall order</th>
<th>N</th>
<th>M (SD)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Before threat</td>
<td>366</td>
<td>4.68 (0.89)</td>
<td>.00</td>
</tr>
<tr>
<td>After threat</td>
<td>356</td>
<td>4.42 (0.75)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 8. Collective self-esteem total score descriptive per experimental condition.**

<table>
<thead>
<tr>
<th></th>
<th>Before threat</th>
<th>After threat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Routine recall</td>
<td>Mastery recall</td>
</tr>
<tr>
<td>Identity-relevant</td>
<td>69 4.59 (0.97)</td>
<td>56 4.69 (0.86)</td>
</tr>
<tr>
<td>Identity-irrelevant</td>
<td>65 4.70 (0.79)</td>
<td>55 4.63 (0.90)</td>
</tr>
<tr>
<td>Neutral</td>
<td>70 4.73 (0.88)</td>
<td>51 4.72 (0.95)</td>
</tr>
</tbody>
</table>
Mastery memories as a mechanism for self-affirmation. To test whether participants exposed to an identity-relevant threat, who are also instructed to recall a mastery as opposed to a morning routine memory, would have higher collective self-esteem (H1), we examined the main effects for threat relevance and recall type, as well as their interaction effect. While the main effect for recall type was not significant ($F(1, 710) = 2.64, MSE = .64, p = .10, \eta^2 = .00$), the main effect for threat relevance was; $F(2, 710) = 8.86, MSE = .64, p = .00, \eta^2 = .02$. Participants exposed to the national identity-relevant threat ($M = 4.55, SD = .84$) scored significantly higher ($p = .01$) on collective self-esteem compared to those exposed to the national identity irrelevant threat ($M = 4.40, SD = .68$) but not the neutral condition ($M = 4.70, SD = .93, p = .08$). The interaction between recall type and threat relevance was also significant ($F(2, 710) = 5.67, MSE = .64, p = .00, \eta^2 = .02$).

Using a simple effects analysis we found that, in line with our prediction, participants within the identity-relevant threat condition ($F(1, 716) = 12.22, MSE = .67, p = .00, \eta^2 = .02$), who recalled a mastery memory had significantly higher collective self-esteem ($M = 4.75, SD = .88$) compared to those who recalled a routine morning memory ($M = 4.31, SD = .77$) (See Figure 1). Our finding that differences in collective self-esteem between mastery and routine recalls were only present for the identity-relevant threat condition is in support of hypothesis 1 (H1) and similar to our finding from Study 1, where spontaneous mastery recalls were associated with higher collective self-esteem when threatened. In support of hypothesis 2, there were no differences in mean collective self-esteem scores between mastery and routine recalls for both the identity-irrelevant condition ($F(1, 716) = .55, MSE = .67, p = .46$) and the neutral conditions ($F(1, 716) = .01, MSE = .67, p = .94$).

Mastery memories as coping versus preventing agents against national identity threat. To test whether mastery recall serves as a coping or preventing self-affirmation mechanism under threat (RQ1) as supported by affirmation theory (Steele, 1988), we examined the three-way interaction between threat relevance, recall type, and recall order ($F(2, 710) = 2.36, MSE = .64, p = .09, \eta^2 = .01$) but did not find a significant effect indicating that mastery recall functions both as a coping and preventing agent against threat. We found a general protective or buffering effect of memory as qualified by the significant main effect of recall order ($F(1, 710) = 17.96, MSE = .64, p = .00, \eta^2 = .02$), where participants who reported their autobiographical memory before being exposed to threat had significantly higher collective self-esteem ($M = 4.68, SD = .89$) than participants who reported their autobiographical memory after being exposed to threat ($M = 4.42, SD = .75$). This suggests that recalling a personal memory before threat exposure regardless of memory content, identity relevance, and emotional valence, buffered against negative effects of identity threat (See item four of the supplementary material).

Figure 1. Mean collective self-esteem (CSE) per threat relevance and recall type. Standard errors are represented in the figure by the error bars attached to each column.
National identification strength and global self-esteem moderate the effect of threat on self-affirmation. Using the PROCESS macro (Hayes, 2012) we assessed national identification strength and global self-esteem (all centered prior to analysis) as possible moderators for the effect of mastery versus routine recall on collective self-esteem within the identity-relevant condition.

We first examined the moderation regardless of recall order and did not find a significant effect for any of the variables (global self-esteem $b = .13, t(237) = .76, p = .46$; national identification strength $b = .16, t(237) = 1.48, p = .14$). We then examined the moderation effect of self-esteem and national identification strength separately for recall order, and both emerged as significant moderators of the effect of recall type on collective self-esteem when recall was after threat. We found significant interaction effects between recall type and global self-esteem ($b = .49, t(112) = 2.55, p = .01$) and recall type and national identification ($b = .40, t(112) = 2.36, p = .02$). For participants low on national identification and global self-esteem, collective self-esteem did not differ across recall types ($b = .00, t(112) = .02, p = .98$). However, for participants high on national identification and global self-esteem, collective self-esteem was significantly different across recall type ($b = 1.35, t(112) = 8.62, p = .00$), such that participants who recalled a mastery memory, as opposed to a routine morning memory after the threat condition, had higher collective self-esteem (See Figure 2).

Discussion

In line with our expectation, participants in the identity-relevant threat condition, who also recalled a mastery memory, had significantly higher collective self-esteem compared to participants who recalled a routine morning memory (H1). We did not find such differences when the threat was identity-irrelevant or neutral (H2). Our findings supported a general preventing mechanism (RQ1) of self-affirmation, regardless of threat relevance or recall content. The mere fact of engaging in autobiographical recall seems to have contributed to collective self-esteem by maintaining a positive view of one’s group. In line with our expectations, the effect of mastery versus routine morning recall on collective self-esteem was moderated by national identification (H3) and self-esteem (RQ2) but only when recall occurred after threat.

General discussion

Self-affirmation can alleviate the negative consequences of identity threat (Cook et al., 2012; Sherman et al., 2014). Such effects have been supported in studies using value affirmation interventions with different mechanisms (Creswell et al., 2007). We proposed autobiographical recall of mastery memories as one specific mechanism where the recall of the given event may attenuate
a current challenge (Pillemer, 2003) and specifically a threat to group identity. Recall of a mastered challenge in such a context could be a useful tool to cognitively move away from a threat to our group identity and maintain group esteem. Similarly, recalling a mastered challenge may inoculate against upcoming threats to group identity, preventing them from exerting a negative effect by boosting group esteem. In Study 1, participants under national identity-relevant threat who engaged in the free recall of mastery memories had higher collective self-esteem than when free recalling a routine morning memory (Study 1 H1); an effect only observed when threat was identity-relevant (Study 1 H2). In Study 2 where participants were instructed to either recall mastery or routine morning memories, we found that participants in the identity-relevant threat condition, who also recalled a mastery memory (directive memory), had significantly higher collective self-esteem compared to participants who recalled a routine morning memory (Study 2 H1), an effect only observed in the identity-relevant condition (Study 2 H2). Both national identification (H3) and global self-esteem (RQ3) moderated this effect only when the threat was identity-relevant and when recall came after the threat. We found evidence in support of a general preventing mechanism of autobiographical recall in self-affirmation, and a more specific self-affirming function when the threat was identity-relevant. In short, focusing on mastery memories is useful in general, and particularly when threatened.

**Mastery memories are tools for self-affirmation**

Our findings show that mastery memories can be a means of self-affirmation when threatened. Being faced with information that is threatening to the self-concept, be it at a personal or group level, activates mechanisms that aim at restoring or maintaining a favorable self-view (Aronson et al., 1999; Sherman, Nelson, & Steele, 2000). From a social identity perspective, social groups that people belong to serve as an important basis for self-evaluation (Tajfel & Turner, 1986). When threatened, an individual is motivated to adapt and maintain wellbeing by engaging in cognitive responses such as dismissing threatening information, distancing the self from the threatened domain (Sherman & Cohen, 2006), or further identifying with the threatened domain (Branscombe, Schmitt, & Harvey, 1999). Another response to such threat is self-affirmation (Sherman & Cohen, 2006; Steele, 1988): Reflecting on one’s values or attributes helps deflect negative effects of threat (Sherman et al., 2014; Shnabel et al., 2013; von Hippel, Wiryakusuma, Bowden, & Shochet, 2011). Our experiments showed that the recall of mastery memories was beneficial in addressing threat only when the threat was relevant to one’s identity. That is, when we exposed participants to a threat aimed at another social group, mastery memories did not help restore collective self-esteem. This is specifically relevant as it indicates that the self-affirming function of mastery memories did not emerge in response to a negative stimulus regardless of content but was specifically aimed at addressing a threat that targeted a valued element of the self, in this case, national identity.

Consistent across both studies, we observed that collective self-esteem in the identity-irrelevant threat condition was lower than in all other conditions. We did not expect this, given that the threat was not relevant to the participant (as supported also by the manipulation check), and it would, therefore, follow that participants would respond to this condition similar to the neutral condition. A possible explanation could be that the threat in the identity irrelevant condition was perceived as identity relevant and thus may have indirectly exerted an effect. If that, however, was the case, then the affirmation exercise that followed should have corrected for such blows to collective self-worth as observed for participants who read a vignette directly referencing their group with the threatening information. When considering the interaction between threat relevance and recall type, it could be that the recall of a mastery event when the threat is irrelevant to one’s identity is not a fitting tool for self-affirmation and thus not useful in correcting for negative effects due to the negative threat content. A further explanation could be that U.S. Americans exposed to an identity-relevant threat may have reacted to this threat by affirming their national identity, hence scoring significantly higher on collective self-esteem compared to U.S. Americans exposed to an identity-irrelevant threat. This
would be in line with research on stereotype reactance (Javadian & Zoogah, 2014; Kray, Thompson, & Galinsky, 2001). The nature of the threat manipulation used could have contributed to such a reactance effect as participants were made aware of the stereotype associated with their group through the use of a blatant threat (Nguyen & Ryan, 2008). However, such a reactance does not affect the comparisons within the threat-relevant condition, in which collective self-esteem was higher for those who recalled a mastery as opposed to a routine event.

In Study 1, mastery recall had a positive effect on collective self-esteem, regardless of the type of threat participants were exposed to. A similar trend also emerged in Study 2. This suggests that mastery recall may have served as a positive mood prime, and in turn, ensured overall positive assessments of one’s group. Indeed, research has pointed to an overall positive effect of positively valenced memories on different life domains such as overall well-being (Rathbone, Holmes, Murphy, & Ellis, 2015) and self-esteem (Ritchie, Sedikides, & Skowronski, 2015). While this may hold in general, we sought to disentangle the effect of valence from the recall of a memory related to the threat: specifically, memory valence derived from frequencies for positive and negative affect through LIWC was compared across conditions and no statistically significant differences were found. Therefore, the recall of a mastery memory was not just an event that put our participants in a good mood, but – as stipulated by self-affirmation theory – an event that enhanced participant’s psychological evaluation of themselves as competent and capable, which in turn permeated to their evaluation of their social group (Sherman & Cohen, 2006; Steele, 1988).

Findings from Study 2 point to a general preventive mechanism of recall regardless of type. Engaging in an autobiographical recall of personal events of any type before exposure to threat contributed to collective self-esteem. Reporting a personal memory, whether one of mastery, or one of routine content, requires that one shifts focus to the self, thus increasing self-awareness. In the present scenario, it seems that (autobiographical) self-focus was beneficial for collective self-esteem. Heightened self-focus can be both adaptive and maladaptive depending on the type of self-focus one is engaged in (Teasdale, 1999). For example, ruminative self-focus is associated with more over general, dysfunctional autobiographical memory usage among depressed patients (Watkins & Teasdale, 2004). In contrast to such a ruminative focus, the recall task in our second study elicited mastery (or routine morning) memories and required an attention shift to the self, which in turn could have acted as a buffer for upcoming negative stimuli (Sakaki, 2007).

Consistent with literature on self-affirmation, our findings support both coping and preventing mechanisms of self-affirmation (McQueen & Klein, 2006) which have been described theoretically (Steele, 1988) and supported empirically (Martens, Johns, Greenberg, & Schimel, 2006; Sherman et al., 2014; Stout, Dasgupta, Hunsinger, & McManus, 2011; von Hippel et al., 2011).

**Identification strength and global self-esteem as moderators**

It is important to consider possible moderators when studying the effects of threat and affirmation. Factors such as culture, identity centrality, threat type, self-esteem, and identification strength likely contribute to the effectiveness of specific self-affirmation mechanisms (Sherman & Cohen, 2002). In line with previous work (Armenta, 2010; McCoy & Major, 2003; Schmader et al., 2015; Spears et al., 1997), our results showed that national identification moderated the relationship between self-affirmation (here: mastery versus routine morning memories) and collective self-esteem. Studies addressing the moderating role of self-esteem in threat management have yielded mixed results, with some pointing to no differences in self-affirmation as a function of self-esteem and others indicating negative outcomes following self-affirmation among individuals with low self-esteem (MCQueen & Klein, 2006). We find that low and high levels of global self-esteem should be differentiated to understand the effectiveness of personal memories as self-affirmation tools: Participants with high self-esteem appear to have been able to use their autobiographical memories more efficiently to counteract threats to the self-compared to participants with low self-esteem. Relative to individuals low on self-esteem, those high on self-esteem tend to remember more favorable self-relevant
information (Bosson & Swann, 1999) and are stronger on the self-enhancement motive (Rydell & Boucher, 2010; Tesser, 1988). As such, presenting an individual high on self-esteem with the opportunity to self-affirm by reflecting on a mastery memory – a positive self-relevant memory that also enhances the self’s resources – may present itself as a perfect opportunity to self-enhance and, in turn, mitigate the effect of social identity threat. We only found this moderation when recall operated as a coping rather than preventing agent of threat. Therefore, while both preventing and coping mechanisms contribute to self-affirmation, considering moderators seems more relevant to the coping mechanism.

Limitations and future directions

The present study comes with a number of limitations. First, and inherent to online experiments, is the question of whether participants are paying attention to the task at hand. One study addressed this issue by embedding the question “While watching the television, have you ever had a fatal heart attack?” to assess participant attention. If participants answered “always” or “sometimes” they were discarded from the study. Nevertheless, evidence points to the equivalent fail rate on attention tasks in MTurk and other offline samples (Paolacci, Chandler, & Ipeirotis, 2010). In Study 2, less than 1% of the participants had to be excluded because of the inadequacy of the provided answers on the recall task and considering this rate, it is unlikely that inattention is a pressing issue in the present research.

In Study 2 perhaps a larger effect of self-affirmation would have been observed if participants were instructed to recall a collective memory (group level) which would have matched the group level threat we used. Nevertheless, self-affirmation theory posits that one can draw on aspects of the self that are not the direct target of the threat to affirm the self (Steele, 1988), and theorizing on autobiographical memory functions suggests that autobiographical memories are useful in overcoming obstacles (Pillemer, 2003).

In the future, it is important to replicate the present findings in specific groups: If directive autobiographical memory is useful for deflecting identity threats, then it may be especially useful among populations that experience adversity and threat on a regular basis, such as immigrants or minorities. Living in a new and oftentimes unfamiliar culture brings about an array of challenges to the self. Building upon findings from work on the content of value affirmations, self-affirmation interventions may also benefit from an assessment of more specific mechanisms. For example, the finding that a common theme in value affirmations is that relationships can be assessed using autobiographical recall targeting the social function of memory.

Future studies may benefit from assessing the effect of directive mastery recall on global self-esteem as it would perhaps be a better match to the personal content of the affirmation exercise and therefore produce a larger effect. Studies may also benefit from an assessment of the coping and preventing mechanisms especially when affirmation exercises become more specific in terms of content (e.g., eliciting relational autobiographical memories). Since group affirmation has also been found to be effective (Spencer-Rodgers, Major, Forster, & Peng, 2016), follow-up studies can also address the role of group-level recall or collective memories as means of self-affirmation.

Conclusion

To our knowledge, the present study is the first to demonstrate that autobiographical recall of mastery events operates as a self-affirmation mechanism by maintaining collective self-esteem in the face of identity threat. The functional use of autobiographical memories within different domains such as maintaining well-being (Dalgleish et al., 2013; Schönfeld & Ehlers, 2017) and
fostering a coherent sense of self (Habermas & Köber, 2015; Liao, Bluck, Alea, & Cheng, 2016) has been well established. In line with this functional perspective, we find that drawing on one’s personal memories can be beneficial for self-esteem when faced with a threat to social identity. Our study is a first step towards corroborating the use of memories as a specific mechanism in self-affirmation. Consequently, it is necessary to replicate the present research with other participants, instruments, and experimental manipulations to ensure that the observed phenomenon is robust. This particularly applies to global self-esteem and group identification as moderators. It is possible that mastery memories are only helpful tools of self-affirmation for those both high in self-esteem and strongly invested in a specific group. This would highlight boundaries of the effectiveness of such memories – but also means that those that are likely most affected by a threat (i.e., those for whom the group is most relevant that was threatened) indeed do benefit. Replication is also necessary to examine whether effect sizes associated with the findings are consistently small as noted in the current study. That said, our finding is in line with previous studies where effect sizes associated with self-affirmation interventions have been generally small (e.g., meta-analysis by Sweeney & Moyer, 2015; effect of self-affirmation on GPA of minority students Sherman, et al., 2014). Given that effect sizes associated with outcomes of identity threat have been shown to vary based on threat salience and the target social group (Nguyen & Ryan, 2008), future studies could benefit from examining the effect of self-affirmation under varying levels of threat intensity (salience) and across different populations.

Notes
1. Branscombe et al. (1999) have categorized social identity threat into four classes: categorization threat concerns the ascription of stereotypical group characteristics; distinctiveness threat involves the absence of a sufficiently distinct identity in an inter-group situation; value threats revolve around group values being undermined or attacked; acceptance threats concern the loss of status within a group.
2. All materials (e.g., scales, experimental manipulations, participant instructions, coding guidelines) can be accessed on the Open Science Foundation (OSF) repository through the following link: https://osf.io/b8t4k/. The provided materials are sufficient to allow for an independent researcher to reproduce the reported methodology.
3. Body Mass Index (BMI) was assessed as a possible covariate in Study 1 and a moderator in Study 2 given that the experimental manipulation carried a weight-related theme. It is important to note that BMIs calculated from self-reported height and weight may be inaccurate, as people tend to underreport these values (Gillum & Sempos, 2005). In both studies, BMI did not emerge as a significant contributor (Study 1: b = .01, t(482) = 1.93, p = .16, n^2 = .00 and Study 2: The interaction between BMI and recall type (b = .03, t(113) = 1.80, p = .07).
5. Identity relevant mastery recall before threat/identity relevant routine recall before threat/identity irrelevant mastery recall before threat/identity irrelevant routine recall before threat/neutral mastery recall before threat/neutral routine recall before threat.
6. The overall model was significant (F(5, 112) = 25.23, p = .00, R^2 = .48). The main effect for national identification was not significant (b = .15, t(112) = 1.85, p =.07) and the main effect for self-esteem was significant (b = .33, t(112) = 3.62, p = .00). Recall type (b = .68, t(112) = 6.50, p = .00) had a significant effect such that participants who recalled a mastery memory scored higher on collective self-esteem compared to those who recalled a routine memory.

Disclosure statement
No potential conflict of interest was reported by the authors.

Notes on contributor
Lucy Tavitian-Elmadjian is a doctoral candidate at the Department of Culture Studies at Tilburg University in the Netherlands. Her research examines the role of autobiographical narratives in managing social identity threat and directing acculturation orientations across cultures. She is also interested in how collective memories contribute to
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**Data availability statement**

The data described in this article are openly available in the Open Science Framework at [https://osf.io/b8t4k/](https://osf.io/b8t4k/)

**Open Scholarship**

This article has earned the Center for Open science badges for Open Materials through Open Practices Disclosure. The materials are openly accessible at [https://osf.io/b8t4k/](https://osf.io/b8t4k/)

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**References**


**Appendix A Threat relevance manipulation vignettes**

**Identity-relevant threat**

Americans are known to be fat, more than one-third (34.9% or 78.6 million) of U.S. adults are obese. They eat fast foods such as doughnuts, consumed at a rate of 10 billion per year and hamburgers which are consumed at a rate of 50 billion per year. US Americans are lazy with over 80% not engaging in any type of exercise. As a consequence of this unhealthy diet and a sedentary lifestyle, many Americans develop diabetes which in 2011 alone killed over 70,000 people, and heart attacks resulting in 600,000 deaths per year accounting for 1 in every 4 deaths.
Identity-irrelevant threat

Austrians are known to be fat, more than one-third (34.9% or 78.6 million)\(^1\) of Austrian adults are obese. They eat fast foods such as doughnuts, consumed at a rate of 10 billion per year and hamburgers which are consumed at a rate of 50 billion per year. Austrians are lazy with over 80% not engaging in any type of exercise. As a consequence of this unhealthy diet and a sedentary lifestyle, many Austrians develop diabetes which in 2011 alone killed over 70,000 people, and heart attacks resulting in 600,000 deaths per year accounting for 1 in every 4 deaths.

Neutral condition

A chair is a piece of furniture with a raised surface used to sit on. Chairs are most often supported by four legs and have a back; however, some can have three legs and a different shape. A chair without a back or arm rests is a stool, or when raised up a bar stool. A chair with arms is an armchair and with folding action or reclining footrest, a recliner. A chair for more than one person is a couch, sofa or a bench. The back may extend above the height of the occupant’s head, which can optionally contain a headrest.

Appendix B Recall type manipulation

Mastery recall

Please take a few minutes to remember a time in your life when you experienced a difficult situation. Recall how you overcame it, and how this past experience may have guided you in your future.

After that, please start writing down your memory in as much detail as possible. There are no right or wrong descriptions. You might want to include the setting or location, who else was there, and what happened, so that the event is described in a way that others will understand. Writing down the memory should not take longer than 5–10 min.

Routine morning recall

Please take a few minutes to remember your typical, everyday morning routine. Recall what you usually do during a regular morning.

After that, please start writing down your memory in as much detail as possible. There are no right or wrong descriptions. You might want to include the setting or location, who else was there, and what happened, so that the event is described in a way that others will understand. Writing down the memory should not take longer than 5–10 min.