

Personality and Social Psychology Bulletin

<http://psp.sagepub.com>

There's No Substitute for Belonging: Self-Affirmation Following Social and Nonsocial Threats

Megan L. Knowles, Gale M. Lucas, Daniel C. Molden, Wendi L. Gardner and Kristy K. Dean

Pers Soc Psychol Bull 2010; 36; 173 originally published online Oct 15, 2009;

DOI: 10.1177/0146167209346860

The online version of this article can be found at:
<http://psp.sagepub.com/cgi/content/abstract/36/2/173>

Published by:



<http://www.sagepublications.com>

On behalf of:



<http://www.sagepub.com>
Society for Personality and Social Psychology, Inc.

Additional services and information for *Personality and Social Psychology Bulletin* can be found at:

Email Alerts: <http://psp.sagepub.com/cgi/alerts>

Subscriptions: <http://psp.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations <http://psp.sagepub.com/cgi/content/refs/36/2/173>

There's No Substitute for Belonging: Self-Affirmation Following Social and Nonsocial Threats

Personality and Social Psychology Bulletin
36(2) 173–186
© 2010 by the Society for Personality
and Social Psychology, Inc.
Reprints and permission: <http://www.sagepub.com/journalsPermissions.nav>
DOI: 10.1177/0146167209346860
<http://pspb.sagepub.com>


Megan L. Knowles,¹ Gale M. Lucas,² Daniel C. Molden,²
Wendi L. Gardner,² and Kristy K. Dean³

Abstract

Feelings of belonging are closely linked to feelings of self-esteem. This article examines whether these feelings are regulated in a similar manner. Research on self-esteem maintenance shows that self-enhancement strategies are interchangeable; self-esteem threats in one domain instigate indirect self-affirmations in unrelated domains that effectively replace needs to directly address the original threats. From this perspective, when self-esteem threats arise from a lack of belonging, indirect self-affirmations should again be both preferred and effective. However, belonging regulation may be distinct from self-esteem regulation. From this belonging maintenance perspective, indirect affirmations that enhance esteem, but do not directly repair belonging, may be relatively less preferred and effective following belonging threats. Supporting the belonging maintenance perspective, four studies demonstrated that whereas intelligence threats tended to elicit indirect self-affirmations, belonging threats elicited relatively more direct self-affirmations. Furthermore, whereas indirect affirmation strategies effectively repaired intelligence threats they did not effectively repair belonging threats.

Keywords

belonging regulation; self-esteem maintenance; self-affirmation; social rejection; substitutability of self-enhancement strategies

Received September 28, 2008; revision accepted June 29, 2009

Certainly, man cannot live by milk alone.

Harry Harlow, 1958

In his classic work “The Nature of Love,” Harlow (1958) described how infant macaque monkeys raised in isolation clung to the most companion-like objects available in his laboratory—warm, terrycloth-covered structures. In fact, these monkeys overwhelmingly favored the “terrycloth mothers” over adjacent wire mesh structures that dispensed milk. Like those isolated monkeys whose needs were not satiated by milk alone, human beings also appear to possess fundamental needs for belonging that motivate many of their thoughts and behaviors (Baumeister & Leary, 1995; Maslow, 1954).

Although much research suggests that belonging needs are a key human motivation, studies are only beginning to examine the precise ways in which such needs are regulated. Leary and colleagues (Leary, 2005; Leary & Baumeister, 2000) have suggested that one important process in belonging regulation involves individuals’ feelings of self-esteem. Their *sociometer theory* posits that variations in self-esteem play a key role in signaling the extent to which one is

accepted or rejected by others and function to motivate individuals’ regulation of their social connections (see also Murray, Holmes, & Collins, 2006). Consistent with sociometer theory, multiple studies have linked feelings of self-esteem and perceived social inclusion (Leary et al., 2003; Leary, Haupt, Strausser, & Chokel, 1998; Leary, Tambor, Terdal, & Downs, 1995).

The emphasis the sociometer perspective places on the role of self-esteem in belonging regulation raises questions about the connections between belonging needs and other potential sources of self-esteem. If individuals’ feelings of self-worth are diminished as result of social threat (e.g., receipt of negative social feedback, dissolution of social bonds), must self-esteem be repaired through social means, or are other sources of self-esteem sufficient? Tesser and

¹University of Georgia

²Northwestern University

³California State University, San Bernardino

Corresponding Author:

Megan L. Knowles, Department of Psychology, Franklin & Marshall College,
P.O. Box 3003, Lancaster, PA 17604
E-mail: megan.knowles@fandm.edu

colleagues (e.g., Tesser, 2000, 2001; see also Steele, 1988) have shown that various sources of self-esteem can function interchangeably and are easily substitutable for each other. This flexible *self-esteem maintenance* view suggests that threats to self-esteem in one area (e.g., a poor performance on an important task) can be effectively addressed by bolstering one's esteem in other areas (e.g., by reaffirming one's commitment to cherished values).

A self-esteem maintenance perspective on belonging regulation would thus predict that perceived threats to belonging could also be addressed by a variety of strategies for reaffirming self-esteem; any means of restoring feelings of self-esteem would be expected to, at least temporarily, "turn off" signals of social exclusion and remove concerns with belonging. However, if belonging is indeed a separate fundamental need that, when threatened, requires specific repair, typical self-esteem maintenance processes may not be observed. That is, behaviors simply aimed at improving the "symptom" of reduced self-esteem may be ineffective at alleviating belonging concerns or eliminating the need for further belonging regulation. The primary objective of the current article is to investigate these possibilities and examine whether belonging is a "special" source of self-esteem that is regulated differently and—just as food was no replacement for the comfort of the terrycloth mother in the case of Harlow's (1958) monkeys—is not interchangeable with other common sources of esteem.

Substitutability of Different Sources of Self-Esteem

Evidence for the broad substitutability of different sources of self-esteem in maintaining general feelings of self-worth comes from two primary types of findings. First, Tesser and colleagues (Tesser, Crepez, Collins, Cornell, & Beach, 2000) demonstrated that threats to self-esteem instigate the increased use of various esteem maintenance strategies. For example, following self-threats that arose from attitude-inconsistent or hypocritical behavior, people displayed a stronger tendency to affirm their commitment to important values or to bring to mind self-enhancing social comparisons. Second, Tesser, Steele, and colleagues (Sherman, Nelson, & Steele, 2000; Steele & Liu, 1983; Steele, Spencer, & Lynch, 1993; Tesser & Cornell, 1991; for a review, see McQueen & Klein, 2006) demonstrated that engaging in one form of esteem maintenance replaces the need to implement any additional esteem maintenance strategies. For example, once people affirm their commitment to important values following attitude-inconsistent behavior, they no longer feel the need to alter their attitudes to justify such behavior, as typically happens if no self-affirmation occurs (see Harmon-Jones & Mills, 1999).

Another key aspect of both instigation and replacement effects in esteem maintenance is that, when selecting among

various strategies for restoring self-worth following a threat, people tend to favor alternatives that are not directly related to the threat itself (Tesser, 2000, 2001). For example, Aronson, Blanton, and Cooper (1995) showed that following an attitude-inconsistent behavior that threatened their views of themselves as compassionate, people were particularly unlikely to directly reaffirm their commitment to this important value and instead indirectly affirmed other positive qualities, such as objectivity and sociability. That is, the instigation of esteem maintenance following a particular self-threat was more pronounced for indirect, *threat-irrelevant* strategies than for direct, *threat-relevant* strategies (but see also Stone, Weigand, Cooper, & Aronson, 1997). Further research has shown that in addition to being preferred, strategies that restore self-esteem through indirect means tend to be more effective at alleviating self-threats (i.e., more completely replace the need for further esteem maintenance) than do strategies employing more direct means (Arndt & Greenberg, 1999). Indeed, because attempts to directly reaffirm one's commitment to qualities that have just been threatened can simply magnify one's perceived failure to uphold such qualities, some studies have even shown that employing direct, threat-relevant affirmation strategies actually *increases* rather than replaces subsequent needs for esteem maintenance (i.e., an exacerbation rather than a replacement effect; Blanton, Cooper, Skurnik, & Aronson, 1997; Sivanathan, Molden, Galinsky, & Ku, 2008).

Thus, research on the substitutability of different esteem maintenance mechanisms suggests that when people's self-esteem is threatened, they will display increased efforts to restore self-worth by focusing on their other values, skills, or accomplishments that are not directly related to the threat they are facing. Moreover, to the extent that people do employ these types of indirect self-affirmation strategies, no subsequent esteem maintenance efforts should be necessary.

Belonging as a Unique Threat to Esteem?

As noted previously, many studies have shown that threats to one's social connections or sense of belonging also threaten one's self-esteem. Feeling rejected or left out, anticipating threatening social situations, or receiving negative interpersonal evaluations have all been found to produce feelings of low self-esteem (e.g., Leary et al., 1995; Leary et al., 1998). In addition, longitudinal studies have revealed that believing one is held in poor regard by others generally predicts declining self-esteem over time (Srivastava & Beer, 2005), even if one reports not caring about others' perceptions (Leary et al., 2003; Lemay & Ashmore, 2006; cf. Park & Crocker, 2008). Thus, from a self-esteem maintenance perspective, following threats to social connectedness or perceptions of social competence (i.e., *belonging threats*), people should be expected to regulate these belonging

threats by seeking self-affirmation in other domains not directly related to social concerns and abilities. Moreover, to the extent that they are able to boost esteem in these other domains, if belonging is interchangeable with other sources of self-esteem, this should reduce their subsequent efforts to specifically repair feelings of social connection to boost esteem.¹

There are, however, several reasons to expect that belonging threats may not be equivalent to other types of threats to self-worth previously examined in esteem-maintenance research; thus, these threats may not be fully quelled by another source of self-esteem. First, much theorizing on basic human motivations has distinguished needs for belonging from other self-related needs, such as esteem (Baumeister & Leary, 1995; Bowlby, 1969; Maslow, 1954; see Pittman & Zeigler, 2007), which would imply that goals to restore belonging may not necessarily be fully substitutable with goals to restore self-esteem. In addition, recent studies directly comparing success at establishing social connection with other successes in esteem-relevant areas have found differences between these experiences. Koch and Shepperd (2008) demonstrated that positive feedback about one's social acceptance had a greater impact on individuals' overall self-worth than did positive feedback about one's competence. Similarly, Gailliot and Baumeister (2007) found that feelings of inclusion predict overall self-worth above and beyond perceived success in other domains (e.g., living up to one's values). Finally, other recent studies pertaining to the regulation of belonging needs (see Gardner, Pickett, & Knowles, 2005; Pickett & Gardner, 2005) suggest that instead of shifting their attention to other domains of self-worth following threats to belonging, people tend to directly focus on their social connections (Gardner, Knowles, & Jefferis, in press; Gardner, Pickett, & Brewer, 2000; Knowles & Gardner, 2008). For example, following experiences of social exclusion, people's social identities and group membership tend to be more accessible and they tend to rate their social connections as more important and meaningful.

Thus, in contrast to typical circumstances involving self-esteem maintenance, from the *belonging maintenance* perspective suggested by the preceding theories and findings, people would not be expected to rely on indirect affirmations alone to regulate belonging threats but to additionally seek self-affirmation in domains that are directly related to social concerns and abilities. Moreover, if belonging threats have primacy over esteem threats, then, following belonging threats, people should prioritize direct social affirmation before subsequently seeking to address their esteem needs with more indirect affirmations. Finally, the extent to which individuals do boost esteem in nonsocial domains may not substantially reduce their efforts to specifically repair feelings of social connection or eliminate existing social threats.

Overview of the Present Studies

The studies presented here were designed to directly compare these hypotheses derived from self-esteem maintenance and belonging maintenance perspectives. In all studies, participants experienced direct threats to either their belonging or some nonsocial source of self-esteem (e.g., intellectual ability). To assess the instigation of esteem or belonging maintenance processes, they were then provided with both direct, threat-relevant and indirect, threat-irrelevant opportunities for self-affirmation. Studies 1 and 2 manipulated threat through relived experiences of social exclusion or intellectual failure and measured affirmation by people's choices of social or intellectual topics for a writing exercise about important values (Study 1) or listings of self-descriptive personality traits (Study 2). Studies 3 and 4 manipulated threat through false negative feedback on tasks that ostensibly measured social or intellectual skills and measured affirmation by people's listings of important values (Study 3) or selection of personally important traits (Study 4). To assess the extent to which initial self-affirmations effectively replaced the need for further belonging or esteem maintenance, Study 4 included an additional opportunity for self-enhancement by questioning the validity of the social or intellectual task (i.e., derogating the test).

Across all of these studies, a self-esteem maintenance perspective would predict that, after both belonging and general esteem threats, (a) participants should similarly favor indirect strategies of affirmation that do not match the source of the threat, and (b) engaging in indirect affirmations should replace the use of additional self-enhancement strategies such as test derogation. In contrast, a belonging maintenance perspective would predict that the above pattern of results should emerge following general esteem threats, following belonging threats, (a) participants should favor relatively more direct strategies of affirmation that match the source of the threat, and (b) any indirect affirmation that does occur should not effectively replace the use of additional belonging-enhancement strategies. That is, although the threats to self-esteem produced by a lack of belonging may produce some attempts at indirect affirmation, additional motivations for belonging maintenance that are also evoked should attenuate the overall preference for this type of affirmation and reduce its effectiveness at alleviating the threat experienced.

Study 1

The primary objective of Study 1 was to provide an initial test of esteem and belonging maintenance hypotheses. After bringing to mind either a past experience of social exclusion or intellectual failure, as part of an ostensibly separate study, participants then chose an essay topic for a supposed writing exercise. Among the possible topics were those that involved describing either one's social or intellectual values, which

gave all participants an opportunity for either direct or indirect self-affirmation.

Method

Participants. Seventy-four undergraduates (46 females, 28 males) participated in the study in return for course credit. Their average age was 19.03 years ($SD = 1.18$).

Procedure. After completing a series of tasks for another, unrelated study, participants completed a reliving task that manipulated participants' feelings of belonging or general esteem. Participants randomly assigned to the *belonging threat* condition were asked to

write about a time in which you felt intensely rejected in some way, a time that you felt as if you did not belong. This rejection can be interpersonal in nature (e.g., a time in which someone broke up with you, or no longer wanted to be your friend) or can be a rejection from a group (e.g., a time in which you were chosen last for a team or excluded from a clique).

Participants assigned to the *intelligence threat* condition were asked to

write about a time in which you felt intense failure in an intellectual domain, a time that you felt as if you were not very smart. This failure can be academic in nature (e.g., a time in which you failed a class or an exam) or can be a failure outside of school (e.g., a time in which you tried but failed to understand something important).

In previous research, similar reliving tasks have proven to be effective at producing experiences of social exclusion and intellectual failure (Gardner et al., in press; Knowles & Gardner, 2008; Molden, Lucas, Gardner, Dean, & Knowles, 2009).

After completing one of the two reliving tasks, as part of an ostensibly separate study, participants received a list of five possible essay topics and chose one they would like to complete for a "writing exercise." Two topics were social in nature (i.e., "why friendships are of value to you," "why belonging to groups is of value to you"), two were intellectual in nature ("why intelligent, rational thinking is of value to you," "why getting good grades is of value to you"), and one was open-ended (i.e., "why something else [not social or academic in nature] is of value to you"). Thus, all participants were given an opportunity to reaffirm an important value following some kind of self-threat. To assess what types of self-affirmation strategies participants chose, the essay topic they selected was coded in light of the threat they had recalled. Choices of social topics by participants in the belonging threat condition and choices of academic topics by

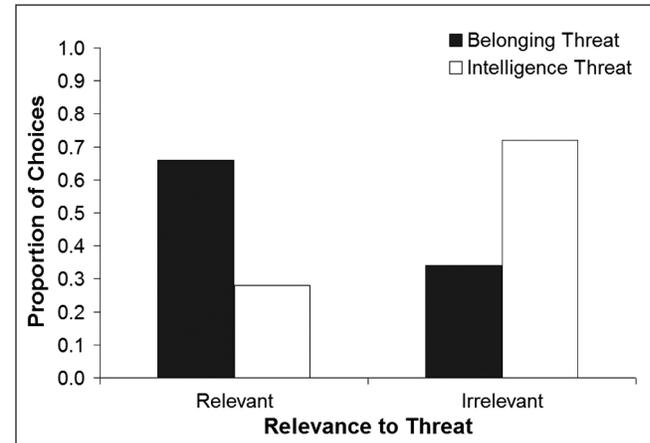


Figure 1. Proportion of threat-relevant or threat-irrelevant essay topics chosen following threats to belonging or intelligence

the participants in the intelligence threat condition were coded as attempts at direct, *threat-relevant* affirmation, whereas all other choices were coded as attempts at indirect, *threat-irrelevant* affirmation.

Results and Discussion

The influence of the relived threat on the self-affirmation strategy pursued was initially tested by analyzing a 2 (threat: belonging vs. intelligence) \times 2 (self-affirmation: threat relevant vs. threat irrelevant) contingency table of their essay topic selections. As displayed in Figure 1, participants in the belonging threat and the intelligence threat conditions preferred significantly different strategies of self-affirmation, $\chi^2(1, N = 74) = 10.72, p = .01$. Those who relived a belonging threat were significantly more likely to choose threat-relevant affirmation (66%) than threat-irrelevant affirmation (34%), $\chi^2(1, n = 38) = 3.79, p = .05, d = .67$, whereas those who relived an intellectual threat were significantly more likely to choose threat-irrelevant affirmation (72%) than threat-relevant affirmation (28%), $\chi^2(1, n = 36) = 7.11, p = .01, d = .95$.^{3,4}

The results of Study 1 supported the belonging maintenance perspective over the self-esteem maintenance perspective. Whereas general esteem threats tended to elicit indirect, threat-irrelevant self-affirmations, as is consistent with past research (Aronson et al., 1995), threats to belonging tended to elicit direct, threat-relevant self-affirmations. This study provides initial evidence that belonging maintenance motives attenuate the general tendency for indirect affirmation after threat. One limitation of Study 1, however, was that people's choices of areas in which they could self-affirm were restricted. It is therefore possible that people's spontaneous self-chosen strategies for self-affirmation do not differ following belonging versus general esteem threats. Moreover, the design of Study 1 did not allow us to examine an additional

component of the belonging maintenance hypothesis involving whether, following belonging threats, direct, belonging-relevant affirmations should occur before any additional indirect, esteem-relevant affirmations. Study 2 was designed to address these limitations.

Study 2

After reliving either a past experience of social exclusion or of intellectual failure, as in Study 1, participants in this study were asked to list self-descriptive personality traits. These lists were then coded for traits relevant or irrelevant to the threatened domains. Thus, participants had an unrestricted opportunity to engage in direct and indirect strategies of self-affirmation, which allowed an examination of trait accessibility via output primacy (i.e., which types of traits were listed first, see Higgins, 1996) immediately after threat.

Method

Participants. Thirty-three students (21 female, 12 male) were recruited for participation around a college campus. They participated in return for a candy bar. Their mean age was 19.79 years ($SD = 1.17$).

Materials and procedure. Participants were randomly assigned to either the *belonging threat* or *intelligence threat* conditions and completed either a rejection or failure reliving task, respectively, as in Study 1. Then, under the guise of a personality questionnaire for another study, participants were prompted to list up to 10 self-descriptive personality traits and rate their positivity from 1 (*not at all*) to 7 (*extremely*). A coder blind to condition later categorized each trait as pertaining to sociability and interpersonal aptitude (e.g., compassionate, friendly), intelligence and academic success (e.g., intelligent, organized), or some other domain (e.g., musical, athletic). Similar to Study 1, in the belonging threat condition, traits pertaining to social success were classified as direct, *threat-relevant* affirmations and all remaining traits were defined as indirect, *threat-irrelevant* affirmations, whereas in the intelligence threat condition, traits pertaining to intellectual success were defined as direct, threat-relevant affirmations and all remaining traits were defined as indirect, threat-irrelevant affirmations.

Results and Discussion

On the whole, participants rated their traits moderately positive ($M = 5.33$, $SD = .63$). Because of our interest in self-affirmation, only positive traits (i.e., those rated at or above the scale midpoint) were used in subsequent analyses. Overall, participants listed a mean of 8.15 ($SD = 1.77$) positive traits, and this did not significantly vary as a function of condition (intelligence threat: $M = 8.47$, $SD = 1.41$; belonging

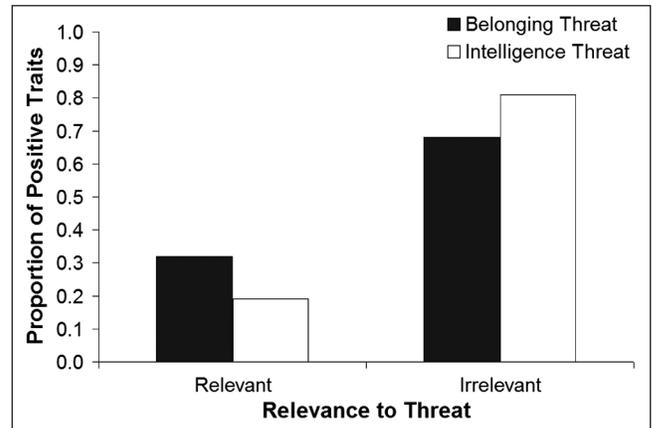


Figure 2. Proportion of threat-relevant or threat-irrelevant positive traits listed following threats to belonging or intelligence

threat: $M = 7.81$, $SD = 2.07$), $t(31) = 1.07$, $p = .29$, $d = .38$. Because participants could list different total numbers of positive traits, self-affirmation strategies following threat were tested by analyzing the proportions of threat-relevant versus threat-irrelevant traits included in these lists.

Overall, one fourth of positive traits listed were threat relevant ($M = .25$, $SD = .17$), meaning the remaining three fourths were threat irrelevant ($M = .75$, $SD = .17$). As displayed in Figure 2, participants in the belonging threat condition listed a significantly higher proportion of threat-relevant traits ($M = .32$, $SD = .16$) than did those in the intelligence threat condition ($M = .17$, $SD = .19$), $t(31) = 2.33$, $p = .03$, $d = .85$. As the proportion of threat-irrelevant traits listed is simply the remainder after the proportion of threat-relevant traits has been removed, an analysis of this index produces identical results. Thus, participants' general preference for threat-irrelevant affirmation was moderated, but not wholly eliminated, following a belonging threat, a pattern inconsistent with a strong variant of the belonging maintenance hypothesis predicting no preference under belonging threat. This suggests that, like other self-esteem threats, belonging threat motivates a general impulse to repair self-esteem through indirect affirmations, but additional motivations for belonging maintenance reduce this preference.

Given that the belonging maintenance perspective predicts repairing belonging needs should take precedence over repairing general esteem, this perspective would further predict that following belonging threats, direct affirmations should take immediate precedence over indirect affirmations. To test this additional prediction, we examined the accessibility of threat-relevant and threat-irrelevant traits immediately following different types of threat by assessing the types of traits participants generated first in their lists (i.e., output primacy; see Higgins, 1996). Specifically, we compared how many threat-relevant traits were listed in the

first half of the questionnaire as compared to the second half in a 2 (condition: belonging threat vs. intelligence threat) \times 2 (order: first half vs. second half) mixed-model ANOVA with repeated measures on the second factor. This analysis yielded a Marginal Order \times Condition interaction, $F(1, 31) = 2.97$, $p = .09$. Participants in the belonging threat condition listed significantly more threat-relevant traits in the first half versus the second half of the questionnaire (first half: $M = 1.50$, $SD = .97$; second half: $M = .88$, $SD = .89$), $F(1, 31) = 4.08$, $p = .05$, $d = .67$, whereas participants in the intelligence threat condition listed a similar number of threat-relevant traits in each half of the questionnaire (first half: $M = .76$, $SD = .66$; second half: $M = .88$, $SD = 1.11$), $F(1, 31) = .15$, $p = .70$, $d = .13$. Moreover, participants in the belonging threat condition listed significantly more threat-relevant traits in the first half of the questionnaire than did those in the intelligence threat condition, $F(1, 31) = 6.56$, $p = .02$, $d = .89$. No significant differences emerged on the second half, $F(1, 31) < .001$, $p = .98$, $d = .00$. This pattern of data suggests not only that individuals who suffer a belonging threat engage in more direct self-affirmation than those who suffer an intelligence threat but also that these direct affirmations are given priority immediately following the threat.

Thus, as in Study 1, results supported the belonging maintenance perspective over the self-esteem maintenance perspective. Those who experienced belonging threats spontaneously generated a higher proportion of direct, threat-relevant affirmations than did those who experienced general esteem threats. Consistent with findings that threats to belonging also threaten self-esteem (Leary, 2005), individuals who experienced a belonging threat also appeared to direct their efforts toward repairing their self-esteem via indirect, threat-irrelevant affirmations—the more common strategy overall (cf. Tesser, 2000, 2001). However, for these individuals, repairing belonging still took precedence over repairing self-esteem, and direct self-affirmations tended to be pursued before indirect self-affirmations. Taken together, Studies 1 and 2 therefore provide consistent support for distinctions between people's attempts to regulate belonging threats as compared to general esteem threats.

One limitation of these studies, however, is that belonging and esteem threats were evoked using autobiographical recollections. Although such retrospective methods allowed us to gauge people's responses to actual threatening events in their own lives, these methods sacrificed experimental control over how central threats to self-esteem may have been during these events. Whereas feelings of exclusion may lead to different self-protective responses than feelings of failure, these differences could perhaps be due to a more tenuous connection between exclusion and perceptions of one's social competence than between academic failure and one's intellectual competence. Study 3 addressed this possibility.

Study 3

In this study, participants completed a task that was framed as measuring either their social or intellectual competence. Then, following feedback that they had performed poorly on this task, they were given an opportunity to self-affirm by describing things that they valued highly. The items on these lists were then coded as relevant to social or intellectual domains. Thus, as in Study 2, participants had an unrestricted opportunity to engage in direct and indirect strategies of self-affirmation, and we were again able to examine the immediate accessibility of threat-relevant and threat-irrelevant affirmations immediately after experiencing a belonging or general esteem threat.

Method

Participants. Thirty-nine undergraduates (8 females, 31 males) participated in the study in return for course credit. Their mean age was 19.76 years ($SD = 1.15$).

Materials and procedures. Participants in the *belonging threat* condition were told that they would be taking a test of their social skills that typically predicts social success, whereas those in the *intelligence threat* condition were told that they would be taking a test of their cognitive skills that typically predicts academic success. All participants actually completed the revised version of the Reading the Mind in the Eyes Test (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001), which was titled the "Social Aptitude Test" in the belonging threat condition or the "Cognitive Aptitude Test" in the threat condition. This task consists of 36 images depicting sets of male and female eyes. Each image is paired with four response options (e.g., *reflective*, *aghast*, *irritated*, *impatient*) that vary with each image. Participants were given 2 minutes to label each image with the appropriate descriptor.

The experimenter then provided participants with the correct answers and asked them to count their correct responses. Previous research that has imposed a 2-minute time limit on this task has rarely yielded scores above 20 (Knowles, Lucas, Gardner, & Baumeister, 2009). We were therefore able to provide participants with failure feedback by presenting a false distribution of scores indicating that one third of undergraduates answered 0-20 items correctly, one third answered 21-30 correctly, and one third answered 31-36 correctly, with a supposed average of 25.

As part of an ostensibly separate study, participants were then asked to list four things (either concrete objects or abstract values) that they value highly and to then write a paragraph explaining why these things were important to them. A coder blind to condition later categorized each response as being social in nature (e.g., friends and family), intellectual in nature (e.g., school and intelligence), or neither (e.g., money and faith). As in previous studies, in the

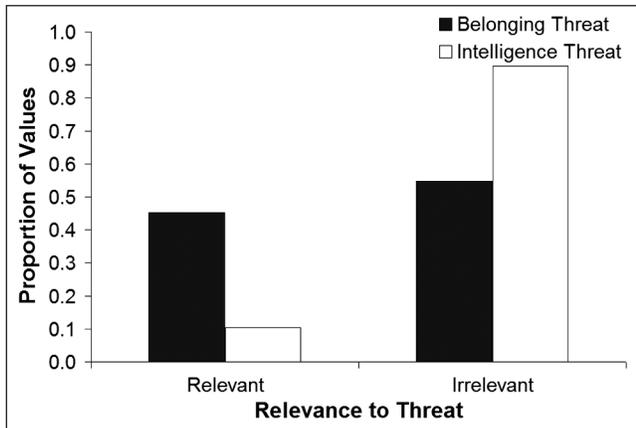


Figure 3. Proportion of threat-relevant or threat-irrelevant values listed following threats to belonging or intelligence

belonging-threat condition, social values were classified as direct, *threat-relevant* affirmations and all other values were classified as indirect, *threat-irrelevant* affirmations, whereas in the intelligence-threat condition, intellectual values were classified as direct, threat-relevant affirmations and all other values were defined as indirect, threat-irrelevant affirmations. As a manipulation check, participants were also asked whether their performance on the previous test put them in the bottom third, middle third, or the top third of scores.

Results and Discussion

Manipulation check. One participant erroneously reported that his score of 10 placed him in the top third of the distribution. His data were removed from further analyses. The remaining participants correctly identified the group to which they belonged based on their test performance ($M = 15.63$, $SD = 4.40$). The scores of 33 participants placed them in the bottom third of the distribution, and the scores of 5 participants placed them in the middle third. Moreover, threat condition did not affect performance, $t(36) = -.05$, $p = .96$, $d = .02$, or placement in the bottom or middle third of the distribution, $\chi^2(1, N = 38) = .05$, $p = .82$, $d = .07$.

Self-affirmation strategies. Similar to Study 2, participants' self-affirmation strategies following threat were tested by analyzing the proportion of the four values listed that represented threat-relevant versus threat-irrelevant affirmations. As displayed in Figure 3, participants in the belonging threat condition ($M = .45$, $SD = .17$) listed a significantly higher proportion of threat-relevant values than did participants in the intelligence threat condition ($M = .10$, $SD = .13$), $t(36) = 7.03$, $p < .001$, $d = 2.25$. Because all participants listed four values in this study, the proportion of threat-irrelevant self-affirmations is simply the remaining proportion of values that were not threat-relevant affirmations, and analyses of threat-irrelevant affirmations produce identical results.

To test the additional predictions of the belonging maintenance perspective concerning the primacy of direct versus indirect affirmations following belonging threats, we compared the number of threat-relevant values listed in the first half of the task to the number of threat-relevant values described in the second half by conducting a 2 (condition: belonging threat vs. intelligence threat) \times 2 (order: first half vs. second half) mixed-model ANOVA with repeated measures on the last factor. Even though participants' opportunities for self-affirmation were more limited in this study than in Study 2, this analysis yielded a main effect of condition, $F(1, 36) = 49.48$, $p < .001$, $d = 1.18$, that was qualified by an Order \times Condition interaction, $F(1, 36) = 5.00$, $p = .03$. Subsequent analyses revealed that participants in the belonging threat condition listed significantly more threat-relevant values in the first half versus the second half of the task (first half: $M = 1.24$, $SD = .70$; second half: $M = .57$, $SD = .68$), $F(1, 36) = 9.44$, $p = .004$, $d = .97$, whereas participants in the intelligence threat condition listed a similar number of threat-relevant values in each half of the task (first half: $M = .18$, $SD = .39$; second half: $M = .24$, $SD = .44$), $F(1, 36) = .06$, $p = .81$, $d = .14$. Furthermore, participants in the belonging threat condition listed significantly more threat-relevant values in the first half of the task than those in the intelligence threat condition, $F(1, 36) = 31.04$, $p < .001$, $d = 1.87$. In the second half of the task, participants in the belonging threat condition listed marginally more threat-relevant values than did those in the intelligence threat condition, $F(1, 36) = 3.13$, $p = .09$, $d = .58$. This pattern of data again suggests that individuals who suffer a belonging threat not only engage in more direct self-affirmation than did those who suffer an intelligence threat, but also that these direct affirmations are given priority immediately following the threat.

Replicating the two previous studies, results again supported the belonging maintenance perspective over the self-esteem maintenance perspective. Those who received negative feedback about their social competence spontaneously generated a higher proportion of direct, threat-relevant affirmations than did those who received negative feedback about their general intellectual competence. Once again, consistent with findings that threats to belonging also threaten self-esteem (Leary, 2005), individuals in the belonging threat condition still used threat-irrelevant affirmations, and as in Study 2, these indirect affirmations were more common overall than direct affirmations (cf. Tesser, 2000, 2001). However, directly following the belonging threats, participants' affirmations were, on average, more likely to be threat-relevant than threat-irrelevant. This immediate preference for threat-relevant affirmations following belonging threat provides additional evidence that belonging maintenance takes priority over general esteem maintenance under these circumstances.

The results of Study 3 extend the previous studies in two ways. First, these findings indicate that the results in Studies

1 and 2 are not a reflection of differences between whether people feel that their basic competencies have been threatened. In this study, participants received feedback that directly implicated either their social or intellectual abilities. Second, these findings indicate that distinctions between belonging maintenance and self-esteem maintenance perspectives are applicable to both belonging threats and threats concerning people's social skills or abilities relevant for establishing social connection.

Although it replicated previous findings, one possible concern with the manipulation used in Study 3 is that participants in each condition may have differed in the extent to which they believed that identifying people's emotional states from their eyes was relevant to their social versus their intellectual abilities. To address this possibility, in Study 4 we manipulated threats to social or intellectual competence using two separate tasks with greater face validity for each type of threat. Furthermore, Studies 1-3 examined the use of different self-affirmation strategies following belonging or general esteem threats but did not examine the extent to which such strategies effectively reduce these threats. Study 4 addressed this limitation as well.

Study 4

Similar to Study 3, participants first completed one of two tasks that ostensibly measured either their social or their intellectual competence. After receiving negative feedback concerning their competence, participants were given the option of affirming several types of personally important qualities; some were relevant to social abilities and some were relevant to intellectual abilities. Thus, as in previous studies, all participants had an opportunity to engage in direct or indirect strategies of self-affirmation. Finally, following this self-affirmation opportunity, participants were given the opportunity to derogate the validity of the social or intellectual task they initially completed as an additional way of restoring self-worth. To the extent that the initial self-affirmation was effective in restoring self-worth, further derogation of the task should not be necessary; however, to the extent that such self-affirmation was ineffective, greater derogation should occur (Steele, 1988; see McQueen & Klein, 2006).

Previous research on self-esteem maintenance suggests that, to the extent that people do adopt indirect, threat-irrelevant affirmation strategies, they no longer need to engage these additional self-enhancing strategies (Arndt & Greenberg, 1999; see Tesser 2000, 2001). Thus, a self-esteem maintenance perspective would predict that threat-irrelevant self-affirmations would lead to less derogation of the initial task following both belonging and general esteem threats. In contrast, the belonging maintenance perspective would predict that, to the extent belonging threats activate unique motivations, threat-irrelevant affirmations should not sufficiently address these threats and should be unrelated to people's subsequent derogation of the initial task.

Specific predictions concerning the subsequent effects of direct, threat-relevant strategies are somewhat more difficult to make. Previous research on self-esteem maintenance has suggested that these initial direct strategies should be generally ineffective in replacing additional self-enhancing strategies (Arndt & Greenberg, 1999), because participants in the present study could simultaneously make both threat-relevant and threat-irrelevant self-affirmations, it is unclear as to whether direct self-affirmations should simply have null effects or exacerbate the existing threat and actually increase the need for additional self-enhancement (cf. Blanton et al., 1997; Sivanathan et al., 2008). Furthermore, the belonging maintenance perspective does not provide clear predictions for the efficacy of threat-relevant self-affirmations in eliminating the need for subsequent attempts at belonging regulation. Given that salient group identities and memberships protect individuals' mood and self-esteem after social threat (Knowles & Gardner, 2008), threat-relevant self-affirmations help reestablish feelings of belonging and, consequently, eliminate the need to further engage in belonging regulatory strategies. On the other hand, threat-relevant self-affirmations typically do not reduce general concerns with self-worth, and as a result, self-affirmations addressing one's central belonging concerns may not be sufficient to eliminate these more general concerns, which would still require additional self-enhancement strategies as well. In other words, direct self-affirmation of one's social value may be perceived as necessary following a belonging threat, but it is unclear whether such affirmation would be sufficient to relieve all of one's esteem concerns. Any present findings concerning effects of direct, threat-relevant self-affirmation strategies on the additional derogation of the initial social or intellectual task should therefore be regarded as exploratory.

Method

Participants. Twenty-three undergraduates (15 female, 8 male) took part in the study in return for course credit. The mean age of the students in the sample was 18.87 years ($SD = .87$).

Materials and procedure. At the beginning of the academic quarter, students took part in a pretesting session in which they were asked to list up to 10 attributes they would like to possess. Only individuals who listed attributes pertaining to social aptitude (e.g., empathic, friendly) and academic success (e.g., smart, focused) were selected for participation to ensure that both domains were personally important for all participants and thus were both potential sources of affirmation.

At least 2 weeks after the pretesting session, participants were brought into a laboratory where they completed the experimental tasks in private, individual cubicles. As part of the cover story, participants were told they would be taking part in two separate studies. The first study consisted of an aptitude test for the ostensible purpose of studying people's performance in relation to previously assessed personality

variables. Participants assigned to the *belonging threat* condition were asked to complete an emotion recognition task by labeling 10 male and female faces as expressing *anger, fear, happiness, surprise, disgust, or sadness*. This task was designed to be challenging, as the expressions displayed were subtle and were selected from the difficult trials created for Ekman's Pictures of Facial Affect (Ekman & Friesen, 1976). Instead of the emotion recognition task, participants assigned to the *intelligence threat* condition completed a difficult version of the Remote Associates Task (Mednick, 1962). In this task, participants were provided 10 problems each consisting of three words that are all connected by a fourth word. For example, in the problem consisting of the words *shopping, washer, and picture*, the correct associate is *window*.

Following the aptitude test, the computer ostensibly tallied participants' responses. Regardless of their actual scores, all participants were told that they completed 3 out of 10 items correctly, ranking them in the 40th percentile compared to other university students. Additionally, participants in the *belonging threat* condition were informed that the test has previously been found to accurately predict empathy and kindness to others, two qualities that are likely to be seen as important for the establishment of meaningful social bonds. Participants in the *intelligence threat* condition were told that the test has been found to accurately predict intelligence. Thus, participants in both conditions received feedback that directly threatened their competence in these respective domains.

Under the guise of a separate study, each participant was then provided with an idiosyncratic list of six traits that were selected from the desirable attributes he or she had provided in the earlier pretesting session. The list for each participant contained two to four traits that were related to the threat that was received (i.e., *threat-relevant* traits) and two to four other desirable traits that were unrelated to this threat (i.e., *threat-irrelevant* traits). Using a partially yoked design, the threat-irrelevant traits were taken from other participants' desirable-trait lists. From the trait list they were given, participants were instructed to select which traits they felt were particularly important to them and to write a short essay about why they found that particular trait desirable. They were further told that they could select as many or as few of the traits as they wished.

Because participants' idiosyncratic traits lists included different numbers of threat-relevant and threat-irrelevant traits from which to choose, we calculated indices of the proportions of these types of traits that were selected. That is, the number of threat-relevant traits each individual chose to affirm was divided by the number of threat-relevant traits available in that individual's personal list, and the number of threat-irrelevant traits participants chose was divided by the number of threat-irrelevant traits available. Thus, participants could have affirmed from 0% to 100% of the threat-relevant traits in their lists and, entirely independent of this, from 0% to 100% of the threat-irrelevant traits.

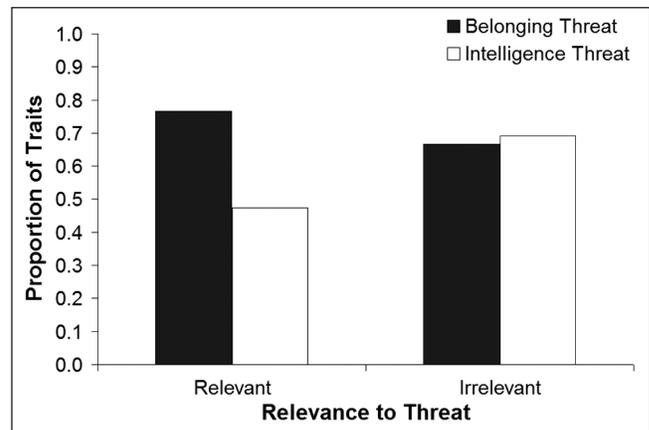


Figure 4. Proportion of threat-relevant or threat-irrelevant traits affirmed following threats to belonging or intelligence

Finally, after writing about their chosen traits, participants were given the opportunity to derogate the test they had taken. Specifically, they reported the extent to which they thought the test was reliable from 1 (*not at reliable*) to 7 (*very reliable*) and measured their aptitude well from 1 (*not at all*) to 7 (*very well*). Responses to these two items were then averaged ($\alpha = .79$) to provide an index of the judged validity of the test.

Results and Discussion

Preferred strategies of self-affirmation. Overall, participants chose to affirm a mean of 3.96 ($SD = 1.36$) traits overall, and the total number of traits affirmed did not differ between threat conditions (belonging threat: $M = 4.40$, $SD = 1.07$; intelligence threat: $M = 3.62$, $SD = 1.50$), $t(21) = -1.40$, $p = .18$, $d = .58$. To test the influence of belonging versus intelligence threats on the types of traits participants affirmed, the proportions of threat-relevant and threat-irrelevant traits they selected were entered into a 2 (threat: belonging vs. intelligence) \times 2 (affirmation: threat-relevant vs. threat-irrelevant) mixed ANOVA with repeated measures on the last factor. Results revealed a significant interaction between condition and the threat relevance of the affirmed traits, $F(1, 21) = 5.60$, $p = .03$. As displayed in Figure 4, follow-up comparisons demonstrated that, as in previous studies, participants in the belonging threat condition affirmed a larger proportion of threat-relevant traits ($M = .77$, $SD = .17$) than did participants in the intelligence threat condition ($M = .47$, $SD = .30$), $F(1, 21) = 6.13$, $p = .02$, $d = 1.23$. In contrast, participants' affirmation of threat-irrelevant traits did not significantly differ as a function of condition, belonging threat ($M = .67$, $SD = .30$; intelligence threat: $M = .69$, $SD = .26$), $F(1, 21) = .05$, $p = .83$, $d = .07$. Further comparisons demonstrated that individuals in the threat condition affirmed significantly more threat-irrelevant than threat-relevant traits, $F(1, 21) = 6.05$, $p = .02$, $d = .78$, whereas those in the belonging threat condition

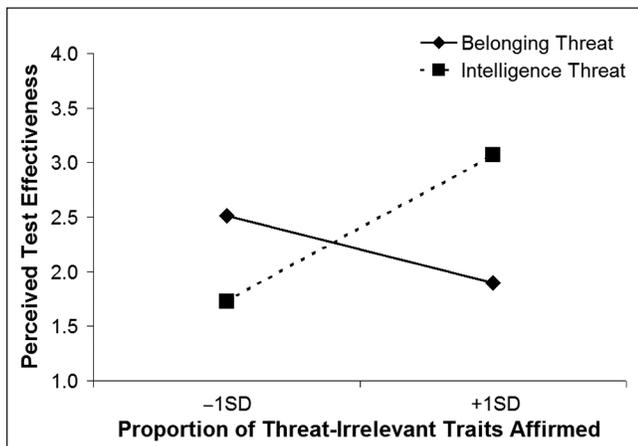


Figure 5. Perceived effectiveness of an aptitude test following threats to belonging or intelligence as a function of the proportion of threat-irrelevant traits previously affirmed

did not differentially affirm threat-relevant and threat-irrelevant traits, $F(1, 21) = .98, p = .33, d = .41$. As in Studies 1-3, belonging threats produced a relative preference for threat-relevant affirmation strategies, and only more general esteem threats resulted in a clear preference for indirect affirmation strategies.

Effectiveness of self-affirmation strategies. To test the effectiveness of these different affirmation strategies for reducing self-threats, participants' ratings of the validity of the social or intellectual aptitude test they completed were submitted to a hierarchical multiple regression. Dummy-coded condition (0 = intelligence threat, 1 = belonging threat) and separate standardized indices of participants' threat-relevant and threat-irrelevant affirmations were entered in a first step, and the Condition \times Threat-Relevant Affirmation and Condition \times Threat-Irrelevant Affirmation interaction terms were added in a second step. Results of the first step revealed no main effects ($t_s < 1, p_s > .55, d_s < .28$), which indicates that the two threat conditions did not generally differ in how strongly failure at the emotion judgments or word problems motivated people to address these threats by derogating the validity of such tasks. The second step revealed a significant Threat Condition \times Threat-Irrelevant Affirmation interaction, $\beta = -.64, t(17) = 2.09, p = .05$. As displayed in Figure 5, follow-up conditional regressions evaluating the simple effects of threat-irrelevant affirmations within each threat condition (see Aiken & West, 1991) revealed a marginally significant effect in the intelligence threat condition, $\beta = .61, t(17) = 2.02, p = .06, d = .93$, such that the more threat-irrelevant affirmations participants made the less they derogated the initial task (i.e., the more valid they judged it to be). In contrast, there was no effect of threat-irrelevant affirmations on the derogation of the initial task in the belonging threat condition, $\beta = -.28, t(17) = 0.93, p = .37, d = .43$, and, if anything, more threat-irrelevant affirmations were associated with greater derogation. In addition, the Threat Condition \times Threat-Relevant Affirmation interaction was not significant, $\beta = -.21, t(17) = 0.77, p = .37$,

and simple slope analyses showed that such affirmations were not significantly associated with judgments of the test in either the belonging threat, $\beta = -.64, t(17) = 1.07, p = .30, d = .49$, or intelligence threat, $\beta = -.14, t(17) = 0.53, p = .61, d = .24$, condition.

Overall, results again supported the belonging maintenance perspective over the self-esteem maintenance perspective. Individuals who received negative feedback about their social competence used more direct, threat-relevant affirmations than those who received negative feedback about their general intellectual competence. As in Studies 2 and 3, individuals in the belonging threat condition still used some indirect, threat-irrelevant affirmations, which were again more common overall (cf. Tesser, 2000, 2001), but did not show the same strong preference for these indirect affirmations as individuals in the esteem threat condition. Furthermore, whereas indirect affirmations were associated with reductions in the use of a subsequent self-enhancement strategy (i.e., derogation of the aptitude test that was the source of the self-threat) following general esteem threats, these indirect affirmations were not associated with such reductions following belonging threats. Thus, belonging threats appear to be distinct from other types of esteem threats, not only in how people choose to respond to them, but also in what is required to alleviate them.

Further highlighting the distinctiveness of belonging threats, neither threat-irrelevant nor threat-relevant strategies of self-affirmation appeared to be effective at relieving these threats. One explanation for such findings is that instead of affirmations of self-esteem (even esteem related to one's social skills), social threats may only truly be repaired by affirming the strength of one's social connections and creating feelings of inclusion (see Gardner et al., in press; Knowles & Gardner, 2008). This would represent another way in which belonging regulation differs from general esteem regulation and is an important topic for further research.

Although the absence of any main effects of threats to intelligence versus belonging on the subsequent derogation of the aptitude test suggests that individuals in the belonging threat condition did not perceive the test to be less valid, these latter analyses of subsequent self-enhancement are somewhat limited by their correlational nature. Future studies exploring the effectiveness of responses to belonging threats should manipulate opportunities for using either direct or indirect self-affirmation, but one advantage of the present correlational design was that it allowed us to simultaneously investigate, and support, both the affirmation-preference and affirmation-effectiveness aspects of the belonging maintenance perspective.

General Discussion

Threats to people's sense of belonging have a substantial impact on their feelings of self-esteem (Leary, 2005). This

article presented four studies investigating how people respond to threats to belonging and attempt to restore their feelings of esteem. Much previous research has demonstrated that in response to self-esteem threats, people tend to (a) distance themselves from the source of the threat and restore esteem in other domains and (b) flexibly employ different types of indirect self-enhancement strategies (e.g., affirming important personal values or making favorable social comparisons) to effectively reduce such threats (McQueen & Klein, 2006; Tesser, 2000, 2001). Across all four studies, participants experiencing general esteem threats (e.g., intellectual failure) showed this typical pattern of self-esteem maintenance. However, in contrast to these typical findings, participants experiencing threats to belonging displayed a relatively greater interest in self-affirmations directly relevant to the source of the threat; indeed, when given the freedom to generate their own affirmations, they gave priority to these direct affirmations over indirect affirmations immediately following belonging threats. Moreover, when indirect self-enhancement strategies were used following belonging threats, they were relatively ineffective at restoring self-esteem, indicating greater inflexibility in the means by which such threats can be addressed.

These distinct findings following belonging threats remained consistent regardless of whether the threats came from recalled experiences of social exclusion (Studies 1 and 2) or perceived deficits in social skills (Studies 3 and 4), whether self-enhancement strategies took the form of affirming the importance of particular values (Studies 1 and 3) or of recalling and contemplating one's positive personality traits, and whether participants chose from options for self-enhancement that were provided (Studies 1 and 4) or generated these options on their own (Studies 2 and 3). Overall, the results of the present studies thus provided clear evidence for a separate process of belonging maintenance by which self-esteem threats that originate from one's social connections are managed in ways that are distinct from typical esteem-regulation processes (see also Gardner et al., 2000; Gardner et al., in press; Knowles & Gardner, 2008).

Previous research suggests that experiences of social exclusion or concerns about one's social competence evoke several types of threats to which one might attempt to respond (Williams, 2001). Whereas threat-relevant affirmations of one's social skills or bonds might be a good strategy to address exclusion-induced belonging deficits (Knowles & Gardner, 2008), they would not be a good strategy for resolving the threats to self-esteem that also arise from exclusion (Arndt & Greenberg, 1999; Blanton et al., 1997; Sivanathan et al., 2008). It would make sense for people facing both belonging and esteem threats from social exclusion to show a relative preference for threat-relevant affirmations more so than those who are only experiencing simple threats to self-esteem, but not necessarily an absolute preference for threat-relevant over threat-irrelevant affirmations, which

would, at best, overlook the additional specific threats to esteem and, at worst, could exacerbate such threats. Thus, the belonging maintenance perspective implies that belonging motives should attenuate, but not necessarily eradicate, individuals' general impulse to self-affirm in threat-irrelevant domains. This attenuation was found across all four studies.

Although belonging-regulation processes allow for both direct and indirect self-affirmation, the belonging maintenance perspective does imply that belonging needs should be prioritized over esteem needs, and thus that direct, threat-relevant affirmations should take precedence over indirect, threat-irrelevant affirmations. Studies 2 and 3 allowed us to examine the priority of these types of affirmations in terms of which were more likely immediately following belonging or esteem threats. Results showed that people did indeed favor direct affirmations immediately following belonging threat. These findings are consistent with previous theorizing about the primacy of motivations for belonging (Baumeister & Leary, 1995; Bowlby, 1969; see Pittman & Zeigler, 2007) and their position on the hierarchy of human needs (Maslow, 1954). They are also consistent with other findings that people (a) react more positively to feedback about acceptance than feedback about their general abilities or competence (Koch & Shepperd, 2008), (b) are upset even when excluded by despised groups (Gonsalkorale & Williams, 2007), and (c) continue to identify with the groups to which they belong even when these groups are stigmatized and held in low esteem by others (Pickett, Bonner, & Coleman, 2002).

One alternative account for the present findings is that instead of differences in the self-regulatory processes evoked by belonging versus esteem threats, participants' selection of self-enhancement strategies was driven more by the generally greater attractiveness of affirmations involving social values and traits as compared to other possibilities. Because Studies 2 and 3 allowed participants to spontaneously generate whatever types of affirmations they preferred, rather than select from a limited set, these studies provide the strongest test of this alternative explanation. We therefore reanalyzed the data from these studies by calculating the proportion of social versus nonsocial affirmations made by each participant and performing a one-sample *t* test with a test value of .50. These analyses revealed that, on average, significantly fewer than half of the traits listed were social in nature in both Study 2 ($M = .37, SD = .15, t(32) = 4.88, p < .001, d = 1.67$, and Study 3 ($M = .41, SD = .18, t(38) = 3.17, p = .003, d = 1.00$). Thus, on the whole, nonsocial affirmations were more frequent (and presumably more preferred) than social affirmations. Although further research on this issue is warranted, a general preference for the affirmation of social traits and values does not appear to adequately explain the current results.

To conclude, the research presented here suggests that belonging needs are distinct from self-esteem needs, as are the strategies that people use to regulate these different needs when they are threatened. Moreover, although feelings

of belonging and feelings of self-esteem are closely related, general strategies for boosting one's self-esteem do not appear to relieve, even temporarily, people's concerns about their social connections or social abilities. In other words, affirming one's positive attributes, values, or aptitudes in a nonsocial domain is not likely to remove the pain of social exclusion; although such affirmations may restore feelings of self-worth and even compensate for lack of personal accomplishment, it seems a lonely man may not be able to get by on that alone.

Authors' Note

Megan L. Knowles is now at Franklin & Marshall College. Kristy K. Dean is now at Grand Valley State University. Thanks to Taejah Vemuri, Ben Figa, and Kevin Shah for their assistance with data collection.

Declaration of Conflict of Interest

The authors had no conflicts of interests with respect to their authorship or the publication of this article.

Funding

The authors received no financial support for their research and/or authorship of this article.

Notes

1. Although previous research on self-esteem maintenance has examined threats from social comparison in which people judge their abilities or performance compared to others (Tesser & Cornell, 1991; Tesser, Crepaz, Collins, Cornell, & Beach, 2000), such comparisons are distinct from threats to belonging, which involve the perceived strength of one's social connections and abilities to form relationships. To our knowledge, self-esteem maintenance involving these types of belonging threats have not been previously investigated.
2. Across all four studies, the inclusion of gender in all analyses did not alter the significance of any of the results reported. Furthermore, there was only a single analysis in which participants' gender significantly interacted with the threat manipulation. Because this interaction was not reliable across studies, it is not interpreted further, and the variable of gender was dropped from all analyses.
3. Participants rated the valence of their relived exclusion or failure experiences on a scale from 1 (*very unpleasant*) to 5 (*very pleasant*). Subsequent analyses of these ratings revealed that although both experiences were rated as very unpleasant overall, failure experiences were somewhat less pleasant ($M = 1.31$, $SD = .47$) than the exclusion experiences ($M = 1.68$, $SD = .70$), $t(71) = -2.62$, $p = .01$, $d = .62$. To examine the possible influence of the overall pleasantness of the relived experience on self-affirmation, we ran a hierarchical logistic regression in which participants' affirmation choice (0 = *threat-irrelevant*, 1 = *threat-relevant*) was predicted by condition (0 = *intelligence threat*, 1 = *belonging threat*) and their pleasantness ratings in the first step, with the Threat \times Pleasantness interaction added

in a second step. Results showed that the main effect of condition, $B = 1.52$, Wald $\chi^2(1, N = 74) = 8.35$, $p = .004$, $d = .71$, remained after controlling for pleasantness ratings. Neither the ratings alone, $B = .14$, Wald $\chi^2(1, N = 74) = 0.10$, $p = .75$, $d = .07$, nor their interaction with condition, $B = .20$, Wald $\chi^2(1, N = 74) = 0.11$, $p = .74$, $d = .08$, attained significance.

4. For all studies, we also coded individuals' affirmations as simply social or nonsocial rather than threat relevant or threat irrelevant and conducted analyses parallel to those presented. An esteem maintenance perspective would predict that fewer social affirmations should be chosen after belonging threats, where these affirmations are threat relevant, than after esteem threats, where they are threat irrelevant. However, a belonging maintenance perspective would predict an increased preference for the threat-relevant social affirmations following belonging threats and an increased preference for the threat-irrelevant social affirmations following esteem threats, leading to no differences between threat conditions. Results of these analyses also supported the belonging maintenance hypothesis and revealed no significant effects of threat condition in any study.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Arndt, J., & Greenberg, J. (1999). The effects of a self-esteem boost and mortality salience on responses to boost relevant and irrelevant worldview threats. *Personality and Social Psychology Bulletin*, 25, 1331-1341.
- Aronson, J., Blanton, H., & Cooper, J. (1995). From dissonance to disidentification: Selectivity in the self-affirmation process. *Journal of Personality and Social Psychology*, 68, 986-996.
- Baron-Cohen, S., Wheelwright, J. H., Hill, J., Raste, Y., & Plumb, I. (2001). The "Reading the Mind in the Eyes" Test Revised Version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 42, 241-251.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Blanton, H., Cooper, J., Skurnik, I., & Aronson, J. (1997). Then bad things happen to good feedback: Exacerbating the need for self-justification with self-affirmations. *Personality and Social Psychology Bulletin*, 23, 684-692.
- Bowlby, J. (1969). *Attachment and loss: Vol. I. Attachment*. New York: Basic Books.
- Ekman, P., & Friesen, W. V. (1976). *Pictures of facial affect*. Palo Alto, CA: Consulting Psychologists Press.
- Gailliot, M. T., & Baumeister, R. F. (2007). Self-esteem, belongingness, and worldview validation: Does belongingness exert a unique influence upon self-esteem? *Journal of Research in Personality*, 41, 327-345.
- Gardner, W. L., Knowles, M. L., & Jefferis, V. (in press). Never alone: The interdependent self as a buffer of social exclusion. *Journal of Personality and Social Psychology*.

- Gardner, W. L., Pickett, C. L., & Brewer, M. B. (2000). Social exclusion and selective memory. How the need to belong influences memory for social events. *Personality and Social Psychology Bulletin*, 26, 486-496.
- Gardner, W. L., Pickett, C. L., & Knowles, M. L. (2005). Social "snacking" and social "shielding": The satisfaction of belonging needs through the use of social symbols and the social self. In K. Williams, J. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying*. New York: Psychology Press.
- Gonsalkorale, K., & Williams, K. D. (2007). The KKK won't let me play: Ostracism even by a despised outgroup hurts. *European Journal of Social Psychology*, 37, 1179-1186.
- Harlow, H. F. (1958). The nature of love. *American Psychologist*, 13, 673-685.
- Harmon-Jones, E., & Mills, J. (Eds.). (1999). *Cognitive dissonance: Progress on a pivotal theory in social psychology*. Washington, DC: American Psychological Association.
- Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133-168). New York: Guilford.
- Knowles, M. L., & Gardner, W. L. (2008). Benefits of membership: The activation and amplification of group identities in response to social rejection. *Personality and Social Psychology Bulletin*, 34, 1200-1213.
- Knowles, M. L., Lucas, G. M., Gardner, W. L., & Baumeister, R. F. (2009). *Choking under social pressure: Interpersonal appraisal among the lonely*. Manuscript in preparation.
- Koch, E. J., & Shepperd, J. A. (2008). Testing competence and acceptance explanations of self-esteem. *Self and Identity*, 7, 54-74.
- Leary, M. R. (2005). Sociometer theory and the pursuit of relational value: Getting to the root of self-esteem. *European Review of Social Psychology*, 16, 75-111.
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. *Advances in Experimental Social Psychology*, 33, 1-62.
- Leary, M. R., Gallagher, B., Fors, E., Buttermore, N., Baldwin, E., Kennedy, K., et al. (2003). The invalidity of disclaimers about the effects of social feedback on self-esteem. *Personality and Social Psychology Bulletin*, 29, 623-636.
- Leary, M. R., Haupt, A., Strausser, K., & Chokel, J. (1998). Calibrating the sociometer: The relationship between interpersonal appraisals and state self-esteem. *Journal of Personality and Social Psychology*, 74, 1290-1299.
- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68, 518-530.
- Lemay, E. P., Jr., & Ashmore, R. D. (2006). The relationship of social approval contingency to trait self-esteem: Cause, consequences, or moderator? *Journal of Research in Personality*, 40, 121-139.
- Maslow, A. (1954). *Motivation and personality*. New York: Harper.
- McQueen, A., & Klein, W. M. P. (2006). Experimental manipulations of self-affirmation: A systematic review. *Self and Identity*, 5(4), 289-354.
- Mednick, S. A. (1962). The associative basis of the creative process. *Psychological Review*, 69, 220-232.
- Molden, D. C., Lucas, G. M., Gardner, W. L., Dean, K. K., & Knowles, M. L. (2009). Motivations for prevention or promotion following social exclusion: Being rejected versus being ignored. *Journal of Personality and Social Psychology*, 96, 415-431.
- Murray, S. L., Holmes, J. G., & Collins, N. L. (2006). Optimizing assurance: The risk regulation system in relationships. *Psychological Bulletin*, 132, 641-666.
- Park, L. E., & Crocker, J. (2008). Contingencies of self-worth and responses to negative interpersonal feedback. *Self and Identity*, 7, 184-203.
- Pickett, C. L., Bonner, B. L., & Coleman, J. M. (2002). Motivated self-stereotyping: Heightened assimilation and differentiation needs result in increased levels of positive and negative self-stereotyping. *Journal of Personality and Social Psychology*, 82, 543-562.
- Pickett, C. L., & Gardner, W. L. (2005). The social monitoring system: Enhanced sensitivity to social cues as an adaptive response to social exclusion. In K. Williams, J. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying*. New York: Psychology Press.
- Pittman, T. S., & Zeigler, K. R. (2007). Basic human needs. In A. W. Kruglanski & T. E. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 473-489). New York: Guilford.
- Sherman, D. A., Nelson, L. D., & Steele, C. M. (2000). So messages about health risks threaten the self? Increasing the acceptance of threatening health messages via self-affirmation. *Personality and Social Psychology Bulletin*, 26, 1046-1058.
- Sivanathan, N., Molden, D. C., Galinsky, A. D., & Ku, G. (2008). The promise and peril of self-affirmation in de-escalation of commitment. *Organizational Behavior and Human Decision Processes*, 107, 1-14.
- Srivastava, S., & Beer, J. S. (2005). How self-evaluations related to being liked by others: Integrating sociometer and attachment perspectives. *Journal of Personality and Social Psychology*, 89, 966-977.
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of self: In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 261-302). New York: Academic Press.
- Steele, C. M., & Liu, T. J. (1983). Dissonance processes as self-affirmation. *Journal of Personality and Social Psychology*, 45, 5-19.
- Steele, C. M., Spencer, S. J., & Lynch, M. (1993). Self-image resilience and dissonance: The role of affirmational resources. *Journal of Personality and Social Psychology*, 64, 885-896.
- Stone, J., Weigand, A. W., Cooper, J., & Aronson, E. (1997). When exemplification fails: Hypocrisy and the motive for self-integrity. *Journal of Personality and Social Psychology*, 72, 54-65.

- Tesser, A. (2000). On the confluence of self-esteem maintenance mechanisms. *Personality and Social Psychology Review*, 4, 290-299.
- Tesser, A. (2001). On the plasticity of self-defense. *Current Directions in Psychological Science*, 10, 66-69.
- Tesser, A., & Cornell, D. P. (1991). On the confluence of self processes. *Journal of Experimental Social Psychology*, 27, 501-526.
- Tesser, A., Crepaz, N., Collins, J. C., Cornell, D., & Beach, S. R. H. (2000). Confluences of self-esteem regulation mechanisms: On integrating the self-zoo. *Personality and Social Psychology Bulletin*, 26, 1479-1489.
- Williams, K. D. (2001). *Ostracism: The power of silence*. New York: Guilford.