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Abstract

Lonely individuals typically fear negative evaluation and engage in overly cautious social behaviors that perpetuate their social isolation. Recent research has found analogous security-oriented (i.e., *prevention-focused*) responses following experiences highlighting concerns with social loss but differing growth-oriented (i.e., *promotion-focused*) responses, such as attempts at social engagement, following experiences highlighting concerns with social gain. The present studies thus investigated whether fostering a promotion focus among lonely individuals through subtle primes of acceptance could reduce their self-protective social avoidance. This hypothesis was supported across four studies in which the links between primed acceptance and promotion-focused motivations were first established, and the impact of such primes on lonely individuals' social thoughts, intentions, and behaviors were then tested. Implications of observed differences between effects of acceptance primes on lonely versus nonlonely individuals are discussed in terms of deficits versus satiation with feelings of belonging.

Keywords

loneliness, regulatory focus, acceptance, belonging, social exclusion

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The most terrible poverty is loneliness.

Mother Teresa of Calcutta

Loneliness hurts. A psychological state characterized by unpleasant feelings of social isolation (Peplau & Perlman, 1982), loneliness is associated with wide-ranging negative outcomes, including poorer physical health (e.g., hypertension and lowered immune responses) and vulnerability to depression (Cacioppo & Patrick, 2008). Although sometimes loneliness is situational and fleeting, chronic loneliness—feelings of social isolation that occur multiple times per week—plagues up to 20% of Americans (e.g., Davis & Smith, 1998).

Given that loneliness is so uncomfortable, lonely individuals should be motivated to feel more included. Indeed, many researchers have suggested that feeling isolated from others should spur efforts toward reconnection (DeWall, Maner, & Rouby, 2009; Gardner, Pickett, & Brewer, 2000; Maner, DeWall, Baumeister, & Schaller, 2007). For example, the social monitoring system model of belonging regulation (Gardner et al., 2000; Pickett & Gardner, 2005) hypothesizes that exclusion induces a cascade of attentional and behavioral

processes designed to promote reinclusion. Consistent with this perspective, both transient and chronic feelings of isolation enhance attention to facial and vocal expressions of emotion, presumably in the service of anticipating and responding to others' needs (Gardner, Pickett, Jefferis, & Knowles, 2005; Pickett, Gardner, & Knowles, 2004). Similarly, social exclusion increases attention to smiling faces over other faces, indicating attunement to signs of potential inclusion (DeWall et al., 2009).

Despite the increased social sensitivity implied by these findings, lonely individuals have problems initiating and maintaining social contact (e.g., Horowitz & French, 1979; Solano, Batten, & Parish, 1982). Lonely individuals are less likely to be open with their opinions and preferences, to continue a line of conversation, and to ask questions compared

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to nonlonely individuals (Anderson & Martin, 1995; Jones, Hobbs, & Hockenbury, 1982). Although some have claimed that this is due to lonely individuals possessing deficient social skills (e.g., Bellack & Morrison, 1982; Hogan, Jones, & Cheek, 1985), some of the studies noted earlier suggest that lonely individuals actually *outperform* nonlonely participants on tasks requiring social sensitivity, such as (a) attending to and recalling social information, (b) attending to emotional vocal expressions, and (c) identifying emotional facial expressions (Gardner et al., 2005). This enhanced social sensitivity suggests that lonely individuals' difficulty in social situations may be less attributable to social skills and sensitivity than to social motivation. Indeed, loneliness is more strongly correlated with self-reported social-performance anxiety than observer-rated social skills (e.g., Solano & Koester, 1989).

Consistent with this social motivational account of loneliness, many other studies have shown that lonely individuals feel anxiety about their ability to perform in social interactions, fearing that interaction partners will negatively evaluate their social performance. Given this anxiety, lonely individuals engage in overly careful and conservative interaction behavior or avoid social interaction altogether (see Cacioppo et al., 2006; Cacioppo & Hawkley, 2005; Jones et al., 1982; Nurmi & Salmela-Aro, 1997). Although these cautious behaviors are aimed at minimizing the possibility of being negatively evaluated by others, they ironically tend to undermine the success of social interactions (Leary & Kowalski, 1995; Pilkonis, 1977; Stangier, Heidenreich, & Schermelleh-Engel, 2006). Engaging in cautious interaction behaviors can make lonely people appear less friendly, warm, and outgoing (Pilkonis, 1977; Stangier et al., 2006). Moreover, although social avoidance may lessen the sting of potential negative evaluations (Downey & Feldman, 1996; Murray, Holmes, & Collins, 2006), it also clearly undermines lonely individuals' desire for social connection. Even studies conducted among nonlonely individuals have shown that those who fear negative evaluations fail to reach out and seek affiliation after social exclusion experiences (Maner et al., 2007).

This combination of increased social anxiety with overly cautious social behavior has led some (e.g., Brewer, 2005) to characterize lonely individuals as generally entering social interactions with a *prevention-focused* mind-set, which primarily involves motivations to maintain feelings of security and protect against negative outcomes (see Higgins, 1997). That is, the self-defeating social emotions and actions typically displayed by lonely individuals may all be related to the broader motivational orientation that guides their social interactions. Thus, if lonely individuals struggle with social interactions primarily because of their prevention-focused social motivations rather than social skill deficits, altering their social motivations in ways that encourage them to seek social engagement could ultimately allow lonely individuals

to reach out to others and reduce their feelings of isolation. The primary objective of the present research is to examine whether lonely individuals' overly cautious social thoughts, intentions, and behaviors can be attenuated by directly priming a *promotion-focused* mind-set or indirectly priming the same motivations through subtle cues of social acceptance.

Distinct Social Strategies From Distinct Social Motivations

People are motivated to fulfill a variety of basic needs that are central to both their physical and social well-being. In considering such needs, scholars have frequently distinguished those concerned with security (i.e., shelter, safety, and protection) from those concerned with advancement (i.e., nourishment, growth, and development; see Bowlby, 1969; Maslow, 1955). Building on this distinction, regulatory focus theory (Higgins, 1997) proposes that beyond originating from different motives, concerns with security (i.e., prevention) and advancement (i.e., promotion) foster different modes of self-regulation. That is, when focused on prevention, people represent, experience, and pursue their goals in a profoundly different way than they do when focused on promotion.

When prevention focused, people are primarily concerned with achieving security (*nonlosses*) while attempting to avoid negative outcomes (*losses*). Meeting these concerns brings feelings of calm, whereas anticipating or experiencing a failure to meet these concerns arouses anxiety (Higgins, 1997). Accordingly, prevention-focused individuals adopt what have been termed *vigilant* strategies that involve protecting against loss, even at the risk of missing opportunities. For example, when evaluating their choices and actions, these individuals play it safe so as to avoid any possible mistakes or losses (Crowe & Higgins, 1997; Forster, Higgins, & Idson, 1998; Friedman & Forster, 2001; Liberman, Molden, Idson, & Higgins, 2001; see Molden, Lee, & Higgins, 2008).

Given the general goal-pursuit strategies associated with prevention motivations, when people are prevention focused within social situations, they are expected to display interaction strategies that are also more vigilant, cautious, and security oriented. Indeed, recent studies have shown that when people encounter instances of social exclusion that activate a prevention focus (i.e., experiences they interpret as a social loss), they respond to this exclusion by (a) reporting stronger feelings of anxiety, (b) adopting a more vigilant focus on the actions they should not have taken to avoid this loss, and (c) choosing to cautiously withdraw from social contact to avoid further potential exclusion (Molden, Lucas, Gardner, Dean, & Knowles, 2009). Importantly, these responses closely match the general patterns of anxiety, caution, and withdrawal shown by chronically lonely individuals (Cacioppo et al., 2006; Duke, Krishnan, Faith, & Storch, 2006; Jones et al., 1982; London, Downey, Bonica, & Paltin, 2007;

Nurmi & Salmela-Aro, 1997; Solano & Koester, 1989), and is thus consistent with the notion that loneliness is generally associated with heightened prevention motivations in social settings (cf. Brewer, 2005).

In contrast, when promotion focused, people are primarily concerned with striving for positive outcomes (*gains*) while attempting to avoid missed opportunities (*nongains*). This regulatory strategy influences affect, cognition, and behavior during goal pursuit. Achieving gains brings feelings of joy, whereas missed opportunities bring feelings of sadness (Higgins, 1997). Promotion-focused individuals adopt what have been termed *eager* strategies of goal pursuit that involve seeking all possible opportunities for gain, even at the risk of committing errors and accepting losses. For example, when evaluating their choices or actions, promotion-focused individuals are willing to take risks so as not to overlook any possibility for potential gains (Crowe & Higgins, 1997; Forster et al., 1998; Friedman & Forster, 2001; Liberman et al., 2001; see Molden et al., 2008).

Given the general goal-pursuit strategies associated with promotion motivations, when people are promotion focused within social situations, they are expected to display interaction strategies that are also gain oriented. Indeed, recent studies have shown that when people encounter instances of social exclusion that activate a promotion focus (i.e., experiences they interpret as a missed social opportunity), they respond to this exclusion by (a) reporting stronger feelings of sadness, (b) adopting a more eager focus on the actions they should have taken to ensure social gain, and (c) being willing to risk further exclusion for the potential gain of social reengagement (Molden et al., 2009). Importantly, although lonely individuals may chronically carry a prevention orientation into social interactions, these motivational orientations can be situationally shifted (see Higgins, 1997; Molden et al., 2008). Circumstances that prime promotion motivations for lonely individuals, then, may potentially allow them to alter their prevention-focused interaction styles, decreasing their caution and encouraging them to make social connections.

Overview of the Present Studies

The present studies were designed to investigate whether activating promotion concerns can motivate chronically lonely individuals to alter their typically cautious social strategies and more eagerly seek social reconnection. Study 1 first sought to establish the type of social experiences that might activate promotion motivations by subtly priming the potential gains of social acceptance. Study 2 then examined whether these subtle acceptance primes could change lonely individuals' social intentions in terms of their concern with negative evaluation and avoidance motivations. To further establish the role of promotion motivations in these effects, Study 3 conceptually replicated Study 2 using a *direct* prime of promotion motivations. Finally, Study 4 examined

whether the promotion motivations inspired by implicit acceptance primes would affect lonely individuals' actual social behaviors in a dyadic interaction.

Across studies, we compared the responses of lonely individuals to their nonlonely counterparts. Nonlonely individuals are generally expected to maintain a promotion orientation in social contexts (Brewer, 2005), pursuing social engagement comfortably and eagerly. To the extent a prevention orientation in social contexts at least partially underlies lonely individuals' typically more cautious interaction style, priming a more promotion-focused orientation should encourage greater engagement for the lonely individuals, making them more similar to nonlonely individuals in their social responses. However, given the existing promotion-focused orientation of nonlonely individuals in social situations, it was unclear whether further priming of promotion motivations would influence their social behaviors. Thus, although we expected the priming manipulations to be equally effective in activating general promotion motivations for both lonely and nonlonely individuals in a *nonsocial* context (Study 1), we predicted that this activation would only encourage more *social* engagement among lonely individuals, as nonlonely individuals were already expected to be promotion oriented in social settings (Studies 2-4). That is, across the studies examining social engagement, we predicted that lonely individuals in the control prime condition would show reduced social engagement when compared to their nonlonely counterparts, but that lonely individuals whose motivations for promotion were primed would exhibit levels of sociality similar to those of the nonlonely individuals.

Study 1

The primary purpose of Study 1 was to establish whether subtly priming experiences associated with the social gains (i.e., social acceptance) could effectively induce a promotion-focused mind-set. If so, this manipulation could then be used to examine the effects of these motivations on lonely individuals in subsequent studies. Participants completed a scrambled sentence task that included words representing acceptance and social connection or neutral control words. Then, several nonsocial indicators of a promotion-focused mind-set were assessed. To assess whether the priming manipulation was equally effective among lonely and nonlonely individuals, these participants were selected from among those who had scored either high or low on a measure of chronic loneliness. Given the nonsocial nature of the dependent variables, we expected no differences between lonely and nonlonely individuals.

Method

Participants. Sixty-one undergraduate participants (33 females) took part in this study in return for course credit.

Gender did not have significant interactive effects on any variables of interest and was therefore dropped from analyses.

Procedure. At the beginning of the academic quarter, a larger group of participants took part in pretesting sessions in which they completed a questionnaire packet including the Revised UCLA (R-UCLA) Loneliness Scale (Russell, Peplau, & Cutrona, 1980). From the upper quartile of scores, 30 lonely participants were randomly selected for further participation; likewise, 31 nonlonely participants were randomly selected from the lower quartile.

Between 2 and 8 weeks later, participants came to an experimental session that ostensibly pertained to cognitive skill and information-processing styles. All participants were asked to complete a sentence unscrambling task by making grammatical four-word sentences from sets of five unordered words (see the appendix; Fitzsimons & Shah, 2008; Srull & Wyer, 1979). For participants in the *acceptance prime* condition, the unscrambled sentences included words that pertained to potential social gains (e.g., *belongs*, *connection*, and *together*), but for participants in the *control* condition, unscrambled sentences included words irrelevant to social gains or social losses (e.g., *cat*, *denim*, and *pencil*).

Participants then completed four tasks used to assess a broad promotion-focused mind-set: a measure of felt eagerness, a categorization task, a creative generation task, and a counterfactual thinking task, each of which has successfully been used as an indicator of promotion motivations in previous research (Molden et al., 2009; Roese, Hur, & Pennington, 1999; Seibt & Forster, 2004). First, participants rated the extent to which they felt eager, the motivational experience most associated with a promotion focus (Seibt & Forster, 2004). Specifically, they answered the question "How eager are you right now?" on a scale from 0 (*not at all eager*) to 8 (*very eager*).

In the categorization task, seeing weak exemplars (e.g., *pickle*) as being more representative of their respective categories (e.g., *vegetable*) indicates creative thinking and set breaking (Isen, 1987). As creativity increases in a promotion focus (Friedman & Forster, 2001), the extent to which these poor exemplars are considered members of their respective categories can indicate stronger promotion motivations (Seibt & Forster, 2004). Participants were provided with four categories (*furniture*, *vehicle*, *vegetable*, and *clothing*) with nine items each, three of which were poor exemplars (Friedman & Forster, 2000; Seibt & Forster, 2004). Participants rated "how well each exemplar belongs to its category" on a scale from 0 (*very poor example*) to 9 (*very good example*).

Likewise, in the creative generation task, listing less common and more creative exemplars is also indicative of broad promotion-focused mind-sets (Friedman & Forster, 2001). Participants completed the brick task, where they simply generated as many creative uses for a brick as they could think of (see Seibt & Forster, 2004). The creativity of these responses was then rated by a coder blind to condition

and loneliness on a scale from 1 (*not at all creative*) to 7 (*very creative*).

In the counterfactual task, thinking about what might have been in terms of the many opportunities that were missed to improve one's outcomes, rather than in terms of the few critical mistakes that led to poor outcomes, has been shown to be associated with promotion-focused mind-sets (Camacho, Higgins, & Luger, 2003; Roese et al., 1999). To assess this tendency, participants were first asked to take a moment to think of a recent negative academic event and imagine three ways things might have gone better by thinking "if only. . . ." For each of these three counterfactuals, participants were then asked to indicate whether it concerned something that was necessary (i.e., that was "the only way") to improve the situation or simply one sufficient alternative (i.e., that was "one of many ways") to improve the situation (Roese et al., 1999).

Before being excused, participants completed a measure of their current affect to ensure that mood did not differ between conditions. Specifically, they rated the emotions they were experiencing from 0 (*not at all*) to 8 (*extremely*), using eight items, including disappointed, agitated, discouraged, on edge, low, uneasy, sad, and tense (Seibt & Forster, 2004). These ratings were then collapsed into a single index ($\alpha = .91$).

Results and Discussion

One participant who completed only the prime was removed from all analyses. Two other participants who failed to complete the three latter tasks were removed from analyses of those variables. Table 1 displays the means and standard deviations for each promotion measure in each condition, as well as effect sizes for the differences between conditions. Because we wanted to consider whether priming acceptance increased a broad promotion-focused mind-set, we meta-analytically calculated an index that summed across all of these measures. Specifically, a within-study meta-analysis (see Hayes, 1998) showed that participants in the acceptance prime condition were more broadly promotion focused than those in the control condition (Strube's $Z = 2.21$, $p = .03$). To determine whether this effect of prime was qualified by loneliness, comparable Strube's Z s were calculated separately for lonely and nonlonely participants; a meta-analytic comparison of those two Strube's Z s (Rosenthal, 1991) revealed no significant differences between these groups ($Z = 0.26$, $p = .80$).¹

To ensure that the prime did not also affect mood, we conducted a 2 (prime: acceptance vs. control) \times 2 (loneliness: lonely vs. nonlonely) ANOVA on mood. This analysis revealed no significant effects, F s < 2.10 , p s $> .15$, d s < 0.39 . Furthermore, controlling for mood did not significantly reduce the effect of condition on any promotion measure, Z s $< .06$, p s $> .95$ (Rosenthal, 1991).

The results of Study 1 suggest that subtle primes concerning the gains of social acceptance induced a broad

Table 1. Effects of Priming Potential Gains of Social Acceptance on Promotion-Focused Thinking

Measure	Acceptance prime		Nonsocial control		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Felt eagerness	3.90	2.11	2.83	1.97	0.53*
Inclusive categorization	3.06	1.08	2.66	1.47	0.31
Creative generation	2.93	1.77	2.36	1.49	0.36
Sufficiency counterfactuals	0.79	0.23	0.70	0.31	0.32
Average effect					0.38*

* $p < .05$.

promotion-focused mind-set, encompassing both broad experiential and cognitive indices. Moreover, the effects of the acceptance prime were not qualified by loneliness, indicating that the general motivational consequences of this prime were similar among lonely and nonlonely individuals. Having established the effectiveness of this prime in inducing promotion motivations in general, the goal of Study 2 was to begin examining our primary hypotheses concerning whether these motivations could mitigate the typical overly cautious and avoidant social intentions displayed by lonely individuals and encourage greater engagement. Given that nonlonely individuals are thought to be more promotion focused in social domains to begin with, we were unsure whether further activation of promotion motivations among these individuals would have an additional effect.

Study 2

Because priming acceptance evoked promotion motivations in Study 1, we predicted that priming acceptance might also reduce evaluative concerns and social avoidance among lonely individuals. To test this hypothesis, both lonely and nonlonely individuals were primed with acceptance as in Study 1. Although we expected lonely individuals to show greater evaluative concerns and social avoidance in the control condition, to the extent that these differences arise in part from their typically heightened prevention concerns in social situations (Brewer, 2005), activating promotion concerns through primes of acceptance should reduce such cautious social responding. In contrast, because nonlonely individuals are presumably already more promotion focused in social situations (Brewer, 2005), priming promotion motivations through social acceptance may not further influence their social responding, and thus they should display generally low levels of evaluative concern and social avoidance in both the control and acceptance prime conditions.

Method

Participants. Eighty-four undergraduates (49 females) took part in this study in return for course credit. Gender did not have significant interactive effects on any variables of interest and was therefore dropped from analyses.

Procedure. As in Study 1, participants took part in pretesting sessions in which they completed the R-UCLA Loneliness Scale using a 7-point scale (Russell et al., 1980). However, to avoid overlap with another study on loneliness that was conducted with the same sample of participants, instead of selecting individuals at extreme levels of loneliness, this experiment used a random sample of participants at varying levels of loneliness who did not take part in the other study. Between 2 and 8 weeks later, participants took part in the experimental session in groups of 4 to 20. As in Study 1, participants in the *acceptance prime* condition completed the scrambled sentence task that included words pertaining to social gains and those in the *control* condition completed a comparable scrambled sentence task with neutral nonsocial words.

Participants then completed measures of evaluative concerns and social avoidance. We measured their sensitivity to negative social evaluation using the Rejection Sensitivity Questionnaire (Downey & Feldman, 1996). Participants were provided with 18 scenarios and were asked to report the extent to which (a) they would be concerned about being accepted and helped on 1 (*very unconcerned*) to 6 (*very concerned*) scales, and (b) they would expect to be accepted and helped on 1 (*very unlikely*) to 6 (*very likely*) scales. For example, participants read the following scenario: "You ask someone in class if you can borrow his/her notes." They then reported "how concerned or anxious [they] would be over whether or not the person would want to lend you his/her notes" and the extent to which they "would expect that the person would willingly give me his/her notes." For each scenario, responses to the concern/anxiety question were multiplied with the expectancy question (reverse scored), and these products were averaged across scenarios to yield an internally consistent ($\alpha = .87$) index of concern with negative evaluation (Downey & Feldman, 1996). To measure social avoidance, participants read about a potential friend-finding agency on campus. They were then asked to respond to the question "If there were a matchmaking agency for friends on campus, would you take advantage of it?" using a 1 (*very unlikely*) to 7 (*very likely*) scale. Because the construct of interest was social avoidance, this item was reverse scored. Social avoidance was not significantly correlated with concerns over negative evaluation, $r(83) = .13, p = .24$.

Results and Discussion

To test the prediction that priming acceptance would reduce lonely individuals' concern with negative social evaluation,

we conducted a regression analysis in which we predicted evaluative concerns (as indexed by the rejection sensitivity measure) by entering the main effects of loneliness scores (centered) and prime condition (dummy coded: 0 = *no prime*, 1 = *acceptance prime*) in a first step, followed by the Loneliness \times Prime interaction term in a second step. This analysis yielded a significant main effect of condition, indicating that participants who received the acceptance prime reported fewer evaluative concerns than those who received no prime, $\beta = -.23$, $t(81) = -2.23$, $p = .03$, as well as a significant main effect of loneliness, indicating that lonelier individuals reported greater evaluative concerns, $\beta = .22$, $t(81) = 2.07$, $p = .04$. As expected, these main effects were qualified by a significant Loneliness \times Prime interaction, $\beta = -.43$, $t(80) = -3.17$, $p = .002$. As displayed in Figure 1a, follow-up simple-slope analyses at 1 *SD* above and below the mean of loneliness (see Aiken and West, 1991) revealed that lonely participants who received the acceptance prime expressed fewer evaluative concerns than lonely participants who received the control prime, $\beta = -.56$, $t(80) = -3.91$, $p < .001$, whereas evaluative concerns of nonlonely individuals did not differ between priming conditions, $\beta = .08$, $t(80) = 0.59$, $p = .56$. Further simple slope analyses replicated previous findings (see Cacioppo et al., 2006; Duke et al., 2006; London et al., 2007) such that, in the control prime condition, lonely individuals had significantly greater evaluative concerns than nonlonely individuals, $\beta = .50$, $t(80) = 3.74$, $p < .001$. However, among participants primed with acceptance, lonely individuals' evaluative concerns did not significantly differ from nonlonely individuals' concerns, $\beta = -.13$, $t(80) = -0.88$, $p = .38$.

We next ran a parallel set of regression analyses on participants' desire for social avoidance. These analyses yielded a significant main effect of condition, $\beta = -.40$, $t(81) = -3.97$, $p < .001$, such that participants receiving the acceptance prime reported less social avoidance than those receiving the control prime. As expected, this main effect was qualified by a significant Loneliness \times Prime interaction, $\beta = -.36$, $t(80) = -2.76$, $p = .007$. As displayed in Figure 1b, follow-up simple slope analyses at 1 *SD* above and below the mean of loneliness revealed that lonely participants primed with acceptance were less avoidant compared to lonely participants who received the control prime, $\beta = -.68$, $t(80) = -4.86$, $p < .001$, whereas avoidance among nonlonely participants did not differ between conditions, $\beta = -.13$, $t(80) = -0.95$, $p = .35$. Further simple slope analyses revealed that among participants in the control prime condition, social avoidance did not significantly differ by loneliness, $\beta = .10$, $t(80) = 0.79$, $p = .43$, and among participants primed with acceptance, lonely participants were even less avoidant than nonlonely participants, $\beta = -.44$, $t(80) = -3.01$, $p = .003$. Although still generally consistent with our predictions, this is not exactly the pattern of results we expected. In hindsight, it is possible that the measure of social avoidance used

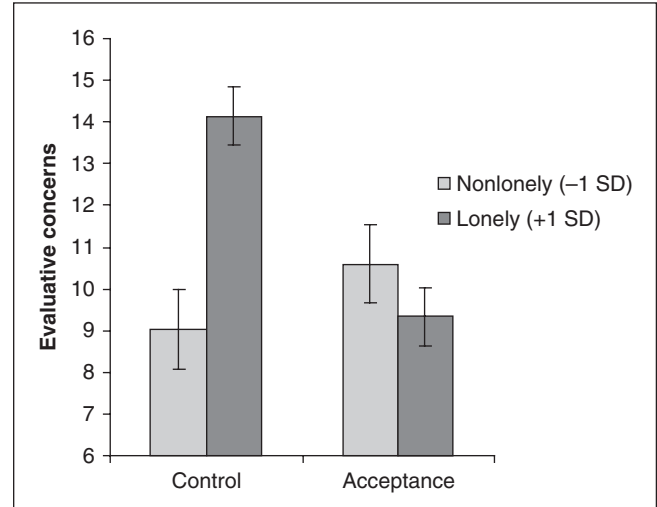


Figure 1a. Concern with others' evaluations among participants high (+1 *SD*) and low (-1 *SD*) in loneliness following an acceptance or control prime (Study 2)

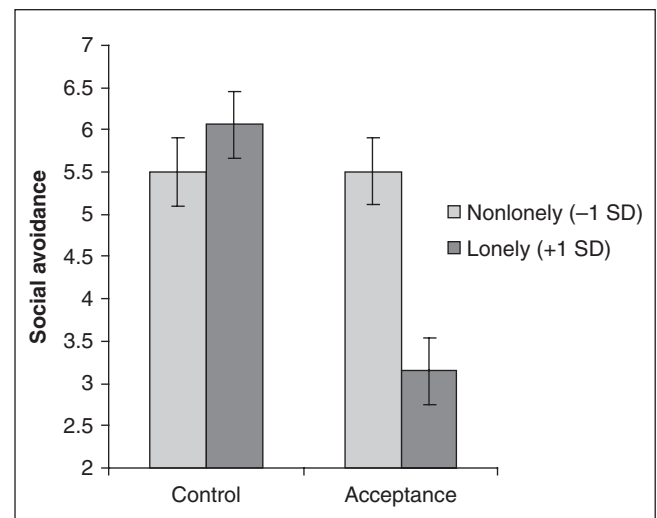


Figure 1b. Social avoidance among participants high (+1 *SD*) and low (-1 *SD*) in loneliness following an acceptance or control prime (Study 2)

(declining a friend-finding service) was not an ideal choice to assess differences in social avoidance among lonely and nonlonely participants, as it may index more than merely social caution. Indeed, nonlonely participants could have been more likely to decline this service on the whole because they felt they had enough good friends already.

In sum, priming lonely individuals with social acceptance reduced their concerns with social evaluation and their desires for social avoidance. In contrast, the same prime had little consequence for nonlonely individuals. Because they tend to be chronically more concerned and anxious about social interactions, lonely individuals experienced stronger

evaluative concerns than nonlonely individuals when the potential for social gains from acceptance was not made salient. However, when this potential was primed, lonely individuals' evaluative concerns were reduced to the point that they did not significantly differ from those of nonlonely participants, and they actually reported being more likely to use a friend matchmaker than their nonlonely counterparts. Nonlonely individuals, presumed to be already characterized by a promotion mind-set in social situations, were not affected by further priming promotion motivations; accordingly, their social responding was unaltered by the acceptance prime.

Study 1 thus showed that acceptance priming produced promotion orientation, and Study 2 demonstrated the consequences of these primes in reducing evaluative concerns and avoidance among the lonely. Although this suggests that the acceptance primes may be influencing lonely individuals because they evoke a more promotion-focused mind-set, the studies presented thus far do not provide direct evidence that the activation of promotion motivations was responsible for these effects on lonely participants' concerns and avoidance. Therefore, Study 3 was designed as a conceptual replication of Study 2 in which motivations for promotion were primed directly.

Study 3

In Study 3 lonely and nonlonely participants completed an essay describing their own promotion-focused goals or wrote a control essay about their summer vacation. Afterward, they completed measures of evaluative concerns and social avoidance. As in the previous study, we predicted that the promotion prime would specifically reduce evaluative concerns and avoidance among lonely, but not nonlonely, individuals.

Method

Participants. Fifty-six undergraduates (34 females) participated in the study in return for course credit. Gender did not have significant interactive effects on any variables of interest and was therefore dropped from analyses.²

Procedure. Again, a larger group of participants took part in pretesting sessions in which they completed the R-UCLA Loneliness Scale (Russell et al., 1980). Twenty-eight individuals who fell into the lowest quartile on the scale and 28 individuals who fell into the highest quartile were selected for further participation. Between 2 and 8 weeks later, participants completed the experimental session in groups of 4 to 20. Participants were told that the study investigated personality and relationships. They then completed a manipulation of promotion motivations under the guise of a personality assessment. Those in the *promotion prime* condition spent 5 min writing an essay describing their hopes, ideals, and aspirations. Because people tend to represent these hopes and aspirations in terms of gains or nongains, bringing them to

mind can create promotion-focused mind-sets for subsequent judgments and decisions (Higgins, 1997). Identical priming manipulations have been used successfully in many previous studies (e.g., Freitas & Higgins, 2002; Higgins, Roney, Crowe, & Hymes, 1994; Liberman et al., 2001). Participants in the *control* condition were instead asked to write for 5 min about their activities during their summer vacation (Tesser & Cornell, 1991).

Participants then completed different measures of concerns with negative evaluation and social avoidance than those from Study 2. To assess concerns with negative evaluation, participants completed items from the Perceptiveness subscale of the Interaction Involvement Scale (Cegala, 1981). Using a scale ranging from 1 (*not at all like me*) to 7 (*very much like me*), participants rated statements such as "I am very observant of others' reactions while I'm speaking." A six-item abbreviated version of the original eight-item subscale was used, and the items displayed reasonable internal consistency ($\alpha = .76$). Participants also completed a measure of the extent to which they endorse avoidance goals in social interaction. This measure was adapted from the Relationships Scale of Impett, Gable, and Peplau (2005). They were asked to consider "occasions when [they] do things for [their] friends, family, and/or romantic partner" and answer a series of nine questions using a scale from 1 (*never*) to 5 (*all of the time*). One example is "I want to avoid negative consequences from others." Because the original questionnaire only asked about desires to avoid negative outcomes (i.e., losses), we added two new items that would tap desires to avoid missed opportunities (i.e., nongains). Specifically, participants were asked how much they generally do things for others because "I want to avoid missing an opportunity to grow in the relationship" and because "I want to avoid stagnating in the relationship." Thus, the measure used in this experiment, which had reasonable internal consistency ($\alpha = .77$), tapped overall endorsement of social avoidance goals rather than specifically prevention-focused desires (see Molden et al., 2008). Endorsement of social avoidance goals was marginally correlated with concerns over negative evaluation, $r(38) = .27, p = .097$.

Results and Discussion

Sixteen participants did not complete the evaluative concern measures; however, all participants completed the measure of social avoidance goals. We predicted that inducing a promotion focus among lonely individuals would reduce their concern with others' evaluations and their endorsement of social avoidance goals. To test this prediction, we first conducted a 2 (prime: promotion vs. control) \times 2 (loneliness: lonely vs. nonlonely) ANOVA on participants' evaluative concerns. Results yielded a significant main effect of loneliness, $F(1, 36) = 8.78, p = .005, d = 0.89$, such that lonely individuals reported stronger evaluative concerns ($M = 4.24$,

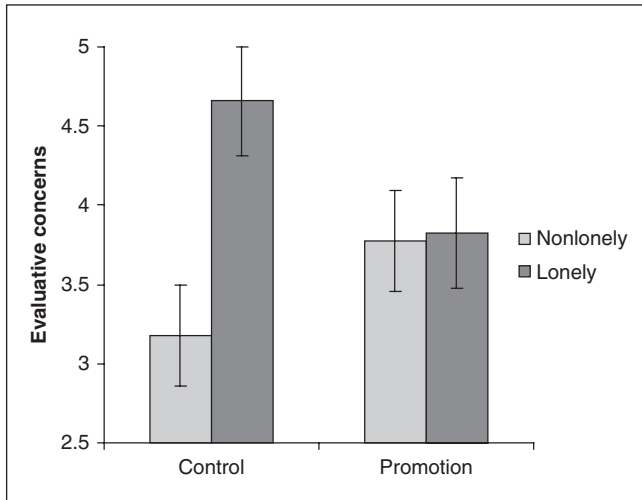


Figure 2a. Concern with others' evaluations among participants high and low in loneliness following a promotion or control prime (Study 3)

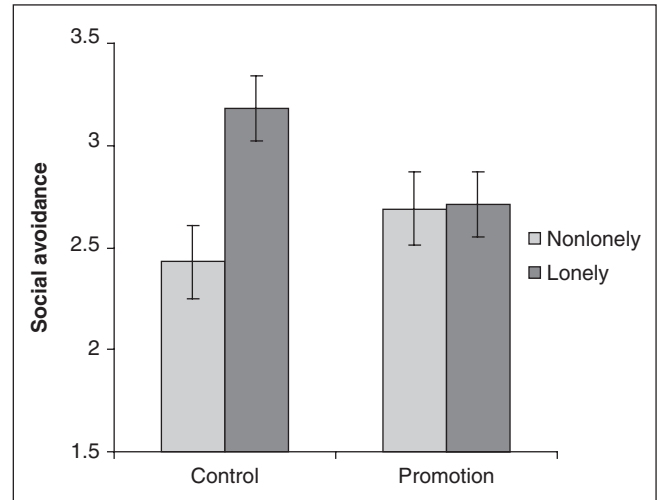


Figure 2b. Social avoidance among participants high and low in loneliness following a promotion or control prime (Study 3)

$SD = 0.93$) than nonlonely individuals ($M = 3.46$, $SD = 0.58$). However, as displayed in Figure 2a, this main effect of loneliness was again qualified by a significant Loneliness \times Prime interaction, $F(1, 36) = 7.73$, $p = .009$. Follow-up contrasts revealed that lonely individuals primed with promotion ($M = 3.83$, $SD = 0.87$) reported significantly fewer evaluative concerns than lonely individuals who received no prime ($M = 4.66$, $SD = 1.16$), $F(1, 36) = 5.06$, $p = .03$, $d = 0.73$. In contrast, this prime did not significantly affect the evaluative concerns of nonlonely individuals, although there was a marginal effect in the opposite direction (promotion prime: $M = 3.78$, $SD = 0.67$; no prime: $M = 3.15$, $SD = 0.83$), $F(1, 36) = 2.86$, $p = .10$, $d = 0.55$. Consistent with previous findings that lonely individuals are chronically more concerned with the evaluations of others (see Cacioppo et al., 2006; Duke et al., 2006; London et al., 2007), further follow-up contrasts revealed that in the control condition, lonely individuals reported greater evaluative concern than nonlonely individuals, $F(1, 36) = 14.36$, $p = .001$, $d = 1.16$. However, in the promotion prime condition, lonely individuals' evaluative concerns did not differ from those of nonlonely individuals, $F(1, 36) = 0.02$, $p = .89$, $d = 0.05$. Thus, priming promotion motivations reduced the difference in evaluative concerns between lonely individuals and nonlonely individuals.

Next, we conducted a 2 (prime: promotion vs. control) \times 2 (loneliness: lonely vs. nonlonely) ANOVA on social-avoidance goals. This analysis revealed a significant main effect of loneliness, $F(1, 52) = 5.87$, $p = .02$, $d = 0.64$, such that lonely individuals reported stronger avoidance goals ($M = 2.95$, $SD = 0.58$) than nonlonely individuals ($M = 2.56$, $SD = 0.65$). However, as displayed in Figure 2b, as before, this main effect was qualified by a significant Loneliness \times Prime

interaction, $F(1, 52) = 5.26$, $p = .03$. Follow-up contrasts revealed that lonely participants in the promotion prime condition ($M = 2.71$, $SD = 0.38$) reported significantly weaker endorsement of avoidance goals than lonely individuals in the control condition ($M = 3.18$, $SD = 0.79$), $F(1, 52) = 4.28$, $p = .04$, $d = 0.56$. In contrast, the promotion prime had no effect among nonlonely individuals (prime: $M = 2.69$, $SD = 0.46$; no prime: $M = 2.43$, $SD = 0.69$), $F(1, 52) = 1.37$, $p = .25$, $d = 0.32$. Further follow-up contrasts revealed that in the control condition, lonely individuals endorsed social avoidance goals to a greater degree than nonlonely individuals, $F(1, 52) = 10.76$, $p = .002$, $d = 0.89$. However, in the promotion prime condition, lonely individuals did not respond significantly differently from nonlonely individuals, $F(1, 52) = 0.09$, $p = .93$, $d = 0.03$. Thus, once again, priming promotion motivations reduced the difference in avoidance between lonely individuals and nonlonely individuals.

Overall, Study 3 showed that among lonely individuals, directly priming promotion motivations had essentially the same effects on evaluative concerns and social avoidance goals as priming the potential of social gains from acceptance in Study 2. However, once again, priming promotion motivations did not affect the responses of nonlonely individuals. Because lonely individuals tend to be chronically more concerned and anxious about social interactions, these individuals had higher evaluative concerns and more thoughts about avoidance in the control condition, but these types of responses were attenuated in the promotion prime condition. In contrast, because nonlonely individuals presumably are generally more promotion focused, they displayed lower levels of evaluative concerns and thoughts about avoidance in the control condition and again were not affected by the further priming of their promotion

motivations. Furthermore, when promotion motivations were primed, lonely individuals' evaluative concerns and endorsement of avoidance motives did not differ from those of nonlonely individuals.

Study 3 thus provides further evidence that priming the social gains of acceptance activates promotion motivations, which then alters the prototypically prevention-focused orientation of lonely individuals toward social interaction. However, all of our studies thus far have only examined self-reports of social strategies, desires, or behavioral intentions. In Study 4, we therefore examined whether activating the possibility of social gain prompts lonely individuals to engage in behaviors that could facilitate social connection.

Study 4

One consequence of lonely individuals' typical anxiety about their ability to perform well in social interactions, and their careful and conservative interaction behavior aimed at minimizing overt failures, is altered nonverbal behavior. For example, simply smiling and nodding one's head is a socially cautious strategy used to signal compliance, but it actually distances the individual from the interaction and thus also lowers interaction partners' evaluations of them (Leary & Kowalski, 1995; Pilkonis, 1977; Stangier et al., 2006). In contrast, actively matching interaction partners' nonverbal behavior (i.e., mimicry) increases feelings of rapport (Lakin & Chartrand, 2003) as well as increases interaction partners' liking (Bavelas, Black, Lemery, & Mullet, 1987; Chartrand & Bargh, 1999).

In Study 4, we therefore examined whether priming the potential social gains associated with acceptance could increase mimicry among lonely individuals. Lonely and nonlonely individuals were subtly primed with acceptance via the scrambled sentence task from Studies 1 and 2, and were given the opportunity to mimic a confederate serving as their interaction partner. Consistent with previous studies, we predicted that priming acceptance would increase mimicry among lonely individuals but not among nonlonely participants.

Method

Participants. Thirty-four undergraduate females participated in return for course credit.

Procedure. As in Studies 1 and 3, participants completed the R-UCLA Loneliness Scale (Russell et al., 1980) in a pre-testing session. Nineteen participants who scored in the lowest quartile were selected for participation, as were 15 participants who scored in the highest quartile. Upon arrival to the experimental session, participants were told the experiment consisted of verbal tasks. As in Studies 1 and 2, participants either unscrambled sentences with words related to social gains (*acceptance prime* condition) or sentences with neutral, nonsocial words (*control prime* condition). Participants were

then led to a room where they would be ostensibly completing a photo description task with another participant. As in previous research using this paradigm, the other participant was in fact a trained confederate (Chartrand & Bargh, 1999; Cheng & Chartrand, 2003). Participants were seated in a chair next to a desk for 1 min while the experimenter ostensibly went to find the other participant. Participants were videotaped during this time from a camera concealed inside a clock on the desk, allowing for a baseline measure of the number of times they touched their face and arm (as only the upper half of the body was visible due to the position of the camera).

A female confederate was then brought in by the experimenter and seated next to the participant. As in previous behavioral mimicry research (Chartrand & Bargh, 1999; Cheng, & Chartrand, 2003), experimenters gave the participant and confederate six photos each, telling them to discuss among themselves anything that came to mind about each. During this task, which lasted an average of 5 min 32 s ($SD = 41.04$ s), the confederate repeatedly touched either her face or her arm while reciting naturalistic scripts for her photos. Participants' mimicry of the confederate's behavior was videotaped, and the number of times participants touched their arms and faces was later tallied by a coder blind to participants' condition and loneliness.

Results and Discussion

To correct for the fact that the distributions for number of touches was positively skewed, a natural logarithmic transformation was applied (see Judd & McClelland, 1989). Although untransformed means will be reported for ease of interpretation, test statistics from all analyses are based on the transformed variables. Mimicry was indexed by the natural log transformed number of mimicking face or arm touches during the task minus the natural log transformed number of face or arm touches during baseline, depending on whether the confederate repeatedly touched either her face or arm. There were no higher order interactions associated with the location (arm or face) touched (all F s < 1.4, p s > .26, d s < 0.38); thus, all data were collapsed across this variable.

A 2 (prime: acceptance vs. control) \times 2 (loneliness: lonely vs. nonlonely) ANOVA on participants' mimicking touches yielded only a significant interaction, $F(1, 30) = 9.10$, $p = .005$. As illustrated in Figure 3, follow-up contrasts revealed that lonely individuals primed with acceptance mimicked the confederate significantly more ($M = 8.13$, $SD = 6.36$) than lonely individuals who received the control prime ($M = 4.00$, $SD = 4.97$), $F(1, 30) = 8.12$, $p = .008$, $d = 1.00$. However, mimicry did not significantly differ between nonlonely participants in the acceptance ($M = 3.11$, $SD = 5.09$) and control prime ($M = 6.40$, $SD = 4.33$) conditions, $F(1, 30) = 1.82$, $p = .19$, $d = 0.48$. Consistent with previous findings that

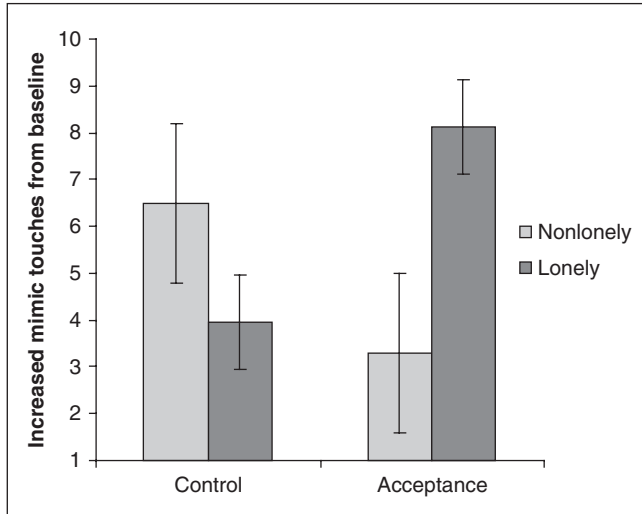


Figure 3. Increased mimicry among participants high and low in loneliness following an acceptance or control prime (Study 4)

lonely individuals seek affiliation less than nonlonely people (e.g., Cacioppo et al., 2006; Cacioppo & Hawkley, 2005), further follow-up contrasts revealed that in the control prime condition, lonely individuals mimicked marginally less than nonlonely individuals, $F(1, 30) = 2.69, p = .11, d = 0.58$. In contrast, after receiving the acceptance prime, lonely individuals mimicked even more than nonlonely individuals, $F(1, 30) = 6.97, p = .01, d = 0.93$. Analogous analyses of the total time spent mimicking the confederate revealed an identical pattern of results.

To ensure that these results were not just due to general increase in touching compared to baseline, the extent to which the participant touched the body part that was not touched by the confederate was indexed by the natural log transformed number of face (arm) touches during the task minus the natural log transformed number of face (arm) touches during baseline in the condition where the confederate touched her arm (face). A 2 (prime: acceptance vs. control) \times 2 (loneliness: lonely vs. nonlonely) ANOVA on participants' nonmimicking touches yielded no effects, $F_s < 0.21, p_s > .65, d_s < 0.15$, verifying that the findings noted previously are specific to mimicking touches.

Thus, consistent with Studies 2 and 3, acceptance priming appeared to attenuate the generally prevention-focused approach to social interaction adopted by lonely individuals and increased their mimicry of a partner during an ongoing interaction. Furthermore, the acceptance prime successfully enhanced lonely individuals' mimicry not only in comparison to the control condition but also in comparison to nonlonely individuals. As in previous studies, priming acceptance did not influence mimicry among nonlonely individuals, presumably because of their already heightened promotion motivations.

General Discussion

Lonely individuals paradoxically make social evaluations and choices that block the very connections they seek. Indeed, their fears of negative evaluation and their cautious interaction style suggest that they typically possess prevention-focused social orientations (Brewer, 2005). In the present studies, we examined how altering lonely individuals' social motivations by activating more promotion-focused mind-sets, either through direct motivational primes or through indirect cues of social acceptance, might reduce their desires for social avoidance and increase their affiliative behavior.

In Study 1, after unscrambling sentences that primed social acceptance, participants felt more eager and broadly responded with a more promotion-focused mind-set compared to those who unscrambled neutral sentences. These findings provided an initial demonstration that experiences of social acceptance can activate promotion motivations. Furthermore, this prime of social acceptance reduced lonely individuals', but not nonlonely individuals', concerns with social evaluations and disinterest in seeking out new friendships in Study 2. Study 3 conceptually replicated Study 2 by directly priming motivations for promotion and examining different measures of concerns with social evaluation and avoidance goals in social interactions. This direct prime of promotion motivations reduced concerns with social evaluation and social avoidance among lonely individuals in the same way as the indirect acceptance primes. Thus, taken together, Studies 1-3 provide suggestive experimental evidence that promotion motivations may mediate the effect of acceptance priming on social engagement among lonely individuals (see Spencer, Zanna, & Fong, 2005). Finally, in Study 4, primes of social acceptance increased lonely individuals' tendency to engage in behavioral mimicry, a sign of increased efforts at social affiliation (see Chartrand & Bargh, 1999; Hess, Philippot, & Blairy, 1999; Lakin & Chartrand, 2005). These findings suggest that activating promotion motivations by priming experiences of acceptance has implications not only for lonely individuals' social concerns and desires but also for their social behavior.

Promotion Motivations and Belonging Regulation

Previous research on how people regulate their feelings of belonging has characterized this process as analogous to a social "hunger" that is highly motivating when perceived deficits in belonging exist following temporary or chronic exclusion but that can be satiated by feelings of acceptance (see DeWall, Baumeister, & Vohs, 2008; Gardner et al., 2005). The present studies provide further support for this account of belonging regulation. Although subtle primes of

acceptance resulted in increased promotion motivations among both lonely and nonlonely individuals (Study 1), these activated promotion motivations only influenced the social intentions and behaviors of lonely individuals (Studies 2-4). Nonlonely individuals, who were presumably already relatively promotion focused in their social behavior, did not show any additional effects of the priming manipulations on their social intentions, evaluations, or behaviors. Indeed, an examination of Figures 1-3 reveals that, if anything, acceptance priming *decreased* social intentions and behaviors among nonlonely individuals. This is consistent with the perspective that whereas lonely individuals are generally “hungry” for belonging and will be inspired to seek opportunities for social connection when the possibility arises, nonlonely individuals are generally “satiated” with belonging and therefore are less sensitive to these opportunities (see also Gardner et al., 2000). This effect is especially striking for the two measures that seem most directly linked to desire for affiliation. Both in the behavioral intentions to use the friendship matchmaking service in Study 2 and in the actual social interaction in Study 4, acceptance priming was associated with a reversal in the patterns of data such that after being primed with cues of acceptance, lonely individuals sought affiliation to a greater degree than nonlonely individuals. These effects may be poignant indicators of the “social hunger” felt by lonely individuals, such that when they are released from their typically cautious style of interacting, they seek affiliation even more than their nonlonely counterparts.

The present studies also add to our understanding of belonging regulation processes in lonely individuals. First, the finding that acceptance and promotion motivations drive only lonely individuals to seek greater social closeness implies that being promotion focused toward social interaction could be uniquely important for social success among lonely participants. Indeed, the finding that lonely individuals’ behavior and inclinations toward others change when primed with promotion motivations, but that nonlonely individuals’ did not, reinforces the idea not only that lonely individuals typically are more prevention focused socially and nonlonely are already more promotion focused socially (Brewer, 2005) but that this prevention focus may present an important barrier to social connection for lonely individuals.

At this point, it still remains to be established what specific factor might lead lonely individuals to be more prevention focused in social interactions. One possibility is that the increased social anxiety that lonely individuals experience induces a more prevention-focused mind-set (cf. Roese et al., 1999), which then leads to greater evaluative concerns and more cautious social behavior. Some recent studies are consistent with this perspective. For example, although anxiety impairs lonely individuals’ ability to identify emotional

facial expressions when the task is presented as a social skills test, allowing them to misattribute this anxiety restores their performance (Knowles, Lucas, Gardner, & Baumeister, 2010). Of course, another possibility is that lonely individuals possess certain temperamental differences that lead them to be both more socially anxious and more dispositionally prevention focused (Cacioppo & Patrick, 2008). Future research that more precisely examines this question could provide further understanding of the paradox of lonely individuals displaying self-defeatingly cautious social behavior despite their desire for increased social contact.

Regardless of the reasons behind lonely individuals’ more prevention-focused mind-set, Studies 2-4 suggest that lonely individuals are capable of adopting less cautious interaction styles, which may ultimately help them rectify the belonging deficits they experience. Lonely individuals clearly possess the desire and ability to engage in behaviors, such as mimicry and friendship seeking, that would foster social closeness because these behaviors were increased through priming promotion-focused mind-sets. The mimicry findings also reinforces evidence that lonely individuals do not necessarily possess social skill deficits (e.g., Gardner et al., 2005; Knowles et al., 2010), suggesting that interventions to improve social interaction among lonely individuals may not need to be aimed at improving such deficits. The present research indicates that perhaps interventions should instead encourage promotion-focused orientations toward social interaction; these orientations could motivate lonely individuals to engage in less conservative social behaviors that would increase interaction partners’ liking of them, thus possibly reducing feelings of loneliness.

Summary and Conclusions

The present research points to one reason why lonely individuals may typically engage in conservative social behaviors. The caution in social interaction observed among lonely individuals here and elsewhere (e.g., Jones et al., 1982; Nurmi & Salmela-Aro, 1997), which, importantly, has been found to reduce interaction partners’ liking (see Leary & Kowalski, 1995; Pilkonis, 1977; Stangier et al., 2006), may stem from their predominant prevention orientation in social situations (Brewer, 2005). Consistent with this proposition, we find that subtly priming lonely individuals to instead adopt a more eager, promotion-focused motivational orientation encourages them to think and behave in ways that could boost their closeness with others, including a reduced focus on negative social evaluation and social avoidance and an increase in behavioral mimicry. That such a subtle prime of acceptance evokes promotion motivations is heartening, as it implies that the “poverty” of loneliness can perhaps begin to be ameliorated with even the smallest promise of social riches.

Appendix

Acceptance sentence unscramble prime

1. club at the tonight meets
2. you she find belongs with
3. truth he understood easy the
4. town friends out the on
5. order took our he fiancé
6. does my this buddy is
7. look stars the decision at
8. today him team played which
9. kitten milk loving the drank
10. quite is he under friendly
11. hat chose he the wanted
12. together went us they there
13. did what see connection he
14. her companion us start joined
15. time left he on stay
16. summer is pal where my
17. has unite grown the plant
18. does how guess know he
19. always a chose everyone partner
20. affiliate on television is the

Control sentence unscramble prime

1. cheese mouse the purple ate
2. ballooning his believed coworkers Mark
3. pretty was chair the skiing
4. his Patrick pants tore icicle
5. Ann apple called them yesterday
6. Sally umbrella away the bought
7. tall green Tom really was
8. quickly very is large Texas
9. frame change his Kurt found
10. too arrived John thorough late
11. crowded the was ink train
12. Adam morning denim every jogs
13. bell cement rang the loudly
14. found kitten highlight a Abby
15. begins grasping at dinner seven
16. daily cloudy her naps cat
17. drips forest faucet David's water
18. his broke walking computer down
19. him to Tara listened trunk
20. pencil well professor the lectured

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Notes

1. Because the method variance is so high between the different types of measures used to assess broad promotion focus, they were not significantly intercorrelated, all $r_s < .18$, all $p_s > .24$. We therefore examined the effect of priming on broad promotion mind-set meta-analytically rather than by averaging the measures into a single index. However, when the measures were z-scored and averaged into an index, a 2 (prime: acceptance vs. control) \times 2 (loneliness: lonely vs. nonlonely) ANOVA revealed only a main effect of prime, $F(1, 56) = 9.70$, $p = .003$, $d = 0.83$, such that lonely and nonlonely participants in the acceptance prime condition were more promotion focused ($M = 0.22$, $SD = 0.45$) than those in the control condition ($M = -0.18$, $SD = 0.52$), which remained significant after controlling for mood, $F(1, 55) = 10.97$, $p = .002$, $d = 0.86$.
2. However, the two-way Loneliness \times Prime interaction for social avoidance goals was further qualified by a marginal effect of gender, $F(1, 47) = 3.14$, $p = .08$, $d = 0.47$. In this case, the avoidance-reducing effect of the promotion focus prime among lonely participants was marginally stronger for females. Because of the lower response rate for the concern with others' evaluation questionnaire, no males low in loneliness completed this questionnaire in the control condition, and thus the three-way interaction for this variable could not be analyzed.

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