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Social Exclusion Causes Self-Defeating Behavior

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Four experiments tested the idea that social exclusion leads to (unintentionally) self-defeating behavior. Exclusion was manipulated by telling some people that they were likely to end up alone later in life. This randomly assigned feedback caused people to take irrational, self-defeating risks (Experiments 1 and 2), choose unhealthy, rather than healthy, behaviors (Experiment 3), and procrastinate longer with pleasurable activities rather than practicing for an upcoming test (Experiment 4). A control group, who heard that their future would be marred by frequent accidents, did not show these self-defeating patterns. Thus, the effect goes beyond just hearing bad news. Emotional distress did not significantly mediate these effects across 3 different mood measures.

A young woman is despondent over being unpopular, so she consoles herself by eating an entire cheesecake out of the freezer. Soon afterward, she worries she will be so fat that no one will ever like her. After a gay couple breaks up following a long relationship, the rejected person despairs of ever finding another partner in the small town where they live and begins having risky, unprotected sex with strangers. A teenage boy is rejected by his peers at a party and feels so distraught that he gets badly drunk, causing him to drive recklessly on the way home and have a serious automobile accident.

Such episodes have created the impression that social exclusion and loneliness can lead to self-defeating behavior. But do they? And if so, why? The present investigation was designed to provide experimental tests of the possible link between social exclusion and self-defeating behavior. We began with the assumption that the need to belong is one of the most basic and fundamental human motivations (Baumeister & Leary, 1995), and so being excluded from social relationships would be a potentially powerful blow. The resulting emotional distress and cognitive disorientation might well lead to self-defeating behaviors. The present research consists of a series of studies in which people were told that they would end up alone for most of their adult lives, after which we measured an assortment of self-defeating behavior patterns.

The potential importance of these findings could go beyond academic theoretical debates about causes of irrational behavior. Several authors have argued that the changes of the last 30 years have led to a society in which people have fewer stable relationships and feel less connected with each other, compared with people of earlier eras. Putnam (2000) found that Americans are now less likely to join community organizations and visit friends than they once were. Only 13% of the population lived alone in 1960, whereas 26% do so now (U.S. Bureau of the Census, 1998). The substantially increased divorce rate, another indicator of unstable social relations, accounts for much of this change. Emotional problems have also increased, including rates of depression (Klerman & Weissman, 1989; Lewinsohn, Rohde, Seeley, & Fischer, 1993) and self-reported anxiety (Twenge, 2000). Other authors have concluded that self-defeating behaviors have also been on the rise, particularly those linked to poor self-regulation such as drug abuse, teen pregnancy, cheating, and the failure to plan ahead (Baumeister, Heatherton, & Tice, 1994; Bronfenbrenner, McClelland, Wethington, Moen, & Ceci, 1996). It is at least conceivable that this broad set of social changes is interrelated (and in fact several authors have made this argument; e.g., Bronfenbrenner et al., 1996; Fukuyama, 1999). In order for society to be able to address these problems successfully, it may be helpful to know whether loss of social connections can cause self-defeating behavior.

Self-Defeating Behavior

Self-defeating behavior has long been a puzzle to psychology. Self-defeating patterns among therapy patients have led some theorists to propose that people have innate self-destructive tendencies (Freud, 1933/1965; Menninger, 1938/1966), or at least that under the press of guilt and other emotional distress they begin wishing to suffer and fail (Piers & Singer, 1953/1971). Reviews of empirical research findings have questioned these views, however. There is very little evidence that people explicitly wish or try to bring suffering, harm, or failure upon themselves (see Baumeister, 1997; Baumeister & Scher, 1988). However, it is indisputable that self-defeating behavior patterns are reliably found even among supposedly normal, mentally healthy populations. Thus, self-defeating activity is real but not necessarily intentional.

Theories based on innate or intentional tendencies toward self-defeat have therefore been gradually supplanted by other models. These models emphasize that the person is typically seeking some positive outcome or benefit, but the pursuit of this positive outcome produces a negative one in either one of two ways (for a

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review, see Baumeister & Scher, 1988). First, some negative outcomes are linked to positive ones, and the person mainly pursues the positive outcome, thereby bringing the bad one along with it. A familiar example of this pattern is cigarette smoking. People do not smoke to give themselves lung cancer and other unhealthy outcomes. Rather, they smoke for the pleasure and satisfaction that it brings, and the lung cancer is an unwelcome companion to these pleasures. Smoking is thus self-defeating because people bring harmful (even lethal), unwanted outcomes on themselves, but smoking does not indicate that people have a death wish or self-destructive intention.

The second type of self-defeating behavior is the use of a counterproductive strategy that backfires. For example, some people attempt self-medication for depression by consuming alcohol, only to find that drinking makes them all the more depressed. Both of these mechanisms implicate some failure at self-regulation. Taking short-term gains that carry long-term or high costs often reflects underregulation, whereas choosing a counterproductive strategy often reflects misregulation.

To be sure, some self-defeating patterns combine the two pathways. Procrastination is a good example. Procrastination is self-defeating because it consists of a pattern of behavioral choices that people make and that bring negative, undesirable outcomes on the self. These outcomes include poorer performance on tasks because of having inadequate time to complete them at the last minute, as well as stress and health costs stemming from deadline pressures. Tice and Baumeister (1997) found that procrastinators obtained lower grades and suffered more stress and poorer health than other students. Some procrastination conforms to the trade-off pattern, because people postpone working on tasks to enjoy immediate pleasures (Ferrari & Tice, 2000). Other procrastination is based on the (apparently false) belief that one will do better work at the last minute, benefiting perhaps from the pressure and excitement of the imminent deadline.

Again, though, there is no empirical basis for regarding procrastination as deliberate, intentional self-defeat. That is, procrastination is not generally performed to impair one's performance or make oneself sick. More generally, the idea that people ever deliberately seek to suffer or fail for the sake of experiencing negative outcomes (as opposed to some positive benefit that is attached) remains tantalizing but lacking in unambiguous empirical support. Even suicide, in which the person deliberately brings about his or her death, appears to derive most commonly from the desire for a positive benefit, namely escape from a demoralizing cycle of intense distress, self-blame, and pervasive emptiness or numbness (Baumeister, 1990). Thus self-defeating behavior is usually unintentionally, rather than intentionally, negative in its outcomes.

The Mediating Role of Emotional Distress

Emotional distress has consistently been linked to self-defeating behavior (Baumeister & Scher, 1988). Leith and Baumeister (1996) found that high-arousal bad moods led to patterns of foolish, self-defeating risk taking, mainly because the distraught people failed to make themselves consider the full range of options and contingencies before they chose. Tice, Bratslavsky, and Baumeister (2001) showed that people procrastinated to feel good right away. When participants thought they could not change their moods, the self-defeating procrastination behavior disappeared.

Hence it seemed plausible that social exclusion would promote self-defeating behavior by means of increases in emotional distress. More precisely, we reasoned that social exclusion would make people feel anxiety and other forms of emotional distress, which would result in self-defeating choices. The capacity of social exclusion to produce emotional distress is well established. Baumeister and Tice (1990) reviewed a broad assortment of findings linking social exclusion to anxiety. Leary (1990) found depression, jealousy, loneliness, and low self-esteem also followed from exclusion. Leary and Meadows (1991) established blushing as a sign of distress associated with actual or potential rejection by others. Leary and Downs (1995) argued that the widespread concern with self-esteem is intimately linked to fear of social rejection and exclusion (see also Leary, Tambor, Terdal, & Downs, 1995). In addition, experiences of ostracism (conceptually similar to social exclusion) usually lead to self-reports of emotional distress (K. D. Williams, 1997; K. D. Williams, Cheung, & Choi, 2000).

Emotional distress is of course not the only possible mediator, although we favored it in our reasoning. Another possibility might be disordered, narrowly focused, or even absent thinking. In constructing a theory of suicide (the most self-defeating of behaviors), Baumeister (1990) noted that signs of intense emotional distress in the presuicidal state seem relatively rare. On the contrary, suicidal individuals were more typically characterized (by themselves as well as researchers) as emotionally numb or flat. Baumeister (1990) proposed that the numbness reflects a cognitive strategy to ward off emotional distress and self-blame. As a result, the presuicidal individual has difficulty engaging in meaningful thought, especially when the thought might involve rational self-interest in a long-term future context (see also Scarry, 1985; Shneidman, 1981; Wyer & Srull, 1986). We recently found that social exclusion leads to such a reduction in intelligent thought, including decreased performance on Graduate Record Examination problems and a general test of intelligence (Baumeister, Twenge, & Nuss, in press). Along similar lines, several researchers have found that psychological stress leads to distractibility (Cohen, Evans, Krantz, & Stokols, 1980), a narrow perspective regarding time and information (Wyer & Srull, 1986), mindlessness (Langer, 1987), and emotional numbing/denial (Pennebaker, 1989; Pennebaker, Czajka, Cropanzano, & Richards, 1990). This fits the proposed connection between social exclusion and self-defeating behaviors fairly well: As Pennebaker (1989) wrote, "during periods of stress, people typically think about immediate issues and are less likely to consider historical precedents or long-term implications" (p. 329). The failure to consider long-term implications is one important hallmark of self-defeating behavior. If social exclusion can produce such a cognitively disoriented state, it might impair self-regulation directly and thus lead to self-defeating acts without necessarily being mediated by high emotional distress.

Social Exclusion and Self-Defeating Behavior

Previous research has indicated some correlational links between social exclusion (i.e., not having close, meaningful relationships) and various kinds of self-defeating behavior. For example, single men are more likely to be arrested for speeding or reckless driving (Harrington & McBride, 1970) and are more likely to be

involved in car accidents (Harano, Peck, & McBride, 1975), especially those related to alcohol (Richman, 1985). Single women and men are also more likely to abuse alcohol and drugs (D. R. Williams, Takeuchi, & Adair, 1992). One of the first works of modern sociology was Durkheim's (1897/1951) book on suicide, in which he concluded that people with fewer social attachments are more likely than others to commit suicide. This conclusion has been confirmed in modern research as well (e.g., Trout, 1980). In addition, married people are often mentally and physically healthier than single, divorced or widowed individuals (Bloom, White, & Asher, 1979; DeLongis, Folkman, & Lazarus, 1988; Goodwin, Hunt, Key, & Samet, 1987; Lynch, 1979; D. R. Williams et al., 1992). These health problems may well be linked to self-defeating behaviors and poor self-regulation, because poor regulation of some behaviors (e.g., overeating, smoking, failing to exercise, alcohol and drug addiction) causes harm to health. Partners in long-term relationships presumably care about each other's welfare and may therefore encourage healthy habits in each other.

In addition, the literature on bereavement links exclusion and self-defeating behavior. Bereaved people are more likely to die from causes related to risky behavior, including accidents and liver cirrhosis caused by alcohol abuse. Incredibly, bereaved people are also murdered more often (Stroebe & Stroebe, 1987). Attachment theory suggests that the emotional exclusion produced by the loss of a close relationship should lead to despair and "giving up." This effect goes beyond simple social loneliness, as emotional loneliness from a lack of close relationships leads to the most distress (Stroebe, Stroebe, Abakoumkin, & Schut, 1996).

Although these patterns suggest links between social exclusion and self-defeating behavior, they are almost exclusively correlational. Thus, one cannot be certain that social exclusion actually causes self-defeating behavior. The converse hypothesis is plausible, namely that people who engage in self-defeating behaviors are rejected by others. For example, consider the link between marriage (a common form of social inclusion) and good health. This correlation might mean that marriage leads to good health. However, it could mean that people in poor health are less likely to marry. Third-variable explanations are also plausible. Perhaps, for example, careless and impulsive people are both less likely to marry and more likely to be in poor health.

Another problem with the correlational findings is that most have not measured social exclusion per se. Instead, they examined only current marital status without regard to the quality of the marital relationship or the number and quality of other relationships. Thus, these studies do not clearly establish a link between social exclusion and self-defeating behavior.

For these reasons, we conducted a series of experimental studies to test the hypothesis that social exclusion causes self-defeating behavior. In these studies, we first manipulated people's perception of social inclusion versus exclusion. This was accomplished by giving people feedback about their likely future social-network status on the basis of a bogus personality test: some were told that they would likely end up alone in the world for much of their adult life (unlike others who were told that their future would involve a rich network of personal relationships, and a misfortune control group who heard that they would be accident prone later in life). After this manipulation, we measured self-defeating behavior in a variety of ways, including choosing to take foolish, self-defeating risks (Experiments 1 and 2), performing several unhealthy behaviors (Experiment 3), or procrastinating rather than practicing for an important test (Experiment 4). Our main prediction was that people who received a blow to their perceived social inclusion would engage in more self-defeating behaviors. We also sought to assess mediation by emotional distress, using three different measures of mood.

Experiment 1

In Experiment 1, we provided a direct test of the hypothesis that social exclusion leads to self-defeating behavior. The essence of the procedure was to give people bogus feedback on a personality test (this procedure was first presented in Twenge, Baumeister, Tice, & Stucke, 2001). In the crucial (*future alone*) condition, this feedback provided the basis for predicting, ostensibly on the basis of actuarial personality data, that the person would end up alone in life. The comparison group was told that their personality profile indicated a future with a rich and strong network of interpersonal relationships (*future belonging*). We also included a second control group (*misfortune control*) that would be based on forecasting an unpleasant but not lonely future. These participants were told that their personality profile predicted an adult life that would involve being accident prone. Thus, they were led to anticipate a series of unpleasant and harmful episodes lay ahead. This condition resembled the future alone condition in that it forecast an unpleasant future, but one whose unpleasantness did not involve social exclusion.

To study self-defeating behavior, we used a measure of risk taking devised by Leith and Baumeister (1996). They addressed the question of how emotional distress produces self-defeating behavior and concluded that the link often involves foolish risks that are likely to bring about negative outcomes. They noted that people may take these risks because they focus on the positive potential outcomes and ignore the downside. In their studies, people who were emotionally distraught tended to choose high-risk, high-payoff options that were objectively poorer risks. When people were forced to self-regulate (by listing all the pros and cons of the various options, instead of simply choosing impulsively), the effect was eliminated.

Their procedure, which we adapted for this experiment, measured self-defeating behavior by having people select between two lotteries. Each lottery involved a cash prize for winners and an aversive, stressful experience for losers. One lottery was a relatively safe bet, whereas the other was a long shot. Each participant was presented with an accurate representation of the potential outcomes of each lottery and the odds of each. The options were deliberately set up so that the two lotteries did not have the same expected gain. Rather, if the participant were to calculate the net expected outcome value for each lottery on the basis of probabilities and outcomes, he or she would invariably conclude that the long shot was the objectively poorer choice and would therefore know rationally to choose the other, play-it-safe lottery. It is thus legitimate to describe the selection of the long-shot lottery as a self-defeating behavior, because it was not the optimal choice and was likely to lead to aversive rather than positive outcomes.

Method

Participants. The participants were 50 undergraduates (25 men, 25 women), participating to fulfill a course requirement in introductory psy-

chology. The sample was 76% White and 24% racial minority; the average age of participants was 18.5 years. Three participants expressed suspicion about the feedback and were dropped; thus there were originally 53 participants. Participants were run individually and were randomly assigned among conditions.

Materials and procedure. Participants first completed a demographic form and a personality questionnaire (the Eysenck Personality Questionnaire; Eysenck & Eysenck, 1975). The experimenter then looked over their questionnaires and told them how they scored. To gain credibility, the experimenter first gave accurate feedback on the participants' extraversion score, telling them whether they scored high, medium, or low on this scale. The experimenter used this as a segue into reading a randomly assigned "personality type" description. One of three descriptions was read. In the future belonging condition, the participant was told "You're the type who has rewarding relationships throughout life. You're likely to have a long and stable marriage and have friendships that will last into your later years. The odds are that you'll always have friends and people who care about you."

In contrast, people in the future alone condition were told that "You're the type who will end up alone later in life. You may have friends and relationships now, but by your mid-20s most of these will have drifted away. You may even marry or have several marriages, but these are likely to be short-lived and not continue into your 30s. Relationships don't last, and when you're past the age where people are constantly forming new relationships, the odds are you'll end up being alone more and more." Last, a misfortune control condition was included, in which people were told that "You're likely to be accident prone later in life—you might break an arm or a leg a few times, or maybe be injured in car accidents. Even if you haven't been accident prone before, these things will show up later in life, and the odds are you will have a lot of accidents."

Following the future prediction, participants rated their mood on a scale from 1 (*very negative*) to 7 (*very positive*). The experimenter then presented them with a form describing a choice between two lotteries; the experimenter said that there would be a lottery at the end of the study. "Winning a lottery," the form explained, "means you receive the money mentioned. However, if you lose, you will have to listen to prolonged unpleasant noise—a 3-min tape of fingernails scraping on a chalkboard." Lottery A offered a 70% chance of winning $2 and a 30% chance of winning no money (and getting the noise). Lottery B offered a 2% chance of winning $25 and a 98% chance of noise without money. Even apart from the noise, it is apparent that Lottery A is objectively the better choice, because it has an expected gain of $1.40—almost three times the expected gain from Lottery B ($0.50). Adding in the differential risk of noise stress increased the discrepancy between the two options. The correct rational choice for all participants would therefore be to choose Lottery A.

Participants selected which lottery they wished to participate in, as well as their confidence in that choice on a 7-point scale. After this, they were fully debriefed (including a careful explanation that the personality feedback was randomly assigned).

Results and Discussion

Lottery choices. The main purpose of Experiment 1 was to see whether anticipated social exclusion would cause people to take foolish risks, a pattern that has been linked to self-defeating behavior. As Table 1 shows, participants had a greater preference for the risky long shot after hearing that they would be likely to end up alone in life, as compared with the other two conditions. Bonferroni corrections applied to bivariate chi-square analyses showed that the future alone condition was significantly different from the other two conditions at $p < .05$, whereas the other two conditions (future belonging and misfortune control) were not significantly different from each other. The effect appears to have been sizable. Only 6% of the participants in the future belonging condition made the irrational choice of the risky lottery, whereas the majority (60%) of those who received the future aloneness manipulation made that same choice. The difference between those two groups was significant, $\chi^2(1, N = 31) = 10.24$, $p < .01$. This is an effect size of $d = 1.39$. This exceeds the cutoff for a large effect size (0.80) under Cohen's (1977) guidelines.

Table 1
Percentage of Participants Choosing the Risky Lottery and Certainty of Choice by Exclusion Condition in Experiment 1

Condition	Percentage choosing risky lottery	Mean certainty[a]
Future belonging	6	2.19 (1.83)
Misfortune control	21	3.11 (3.33)
Future alone	60	7.20 (4.71)
	$\chi^2(2, N = 50) = 11.83$*	$F(2, 48) = 9.28$**

Note. Standard deviations for certainty of lottery choice are shown in parentheses.
[a] Range = 1–14.
* $p < .01$. ** $p < .001$.

The high-risk lottery was objectively the nonoptimal and, in a sense, the wrong choice. It offered a lower expected gain in terms of its probabilistic cash payout, and it carried a greatly enhanced likelihood of having an aversive experience. In that sense, it is a self-defeating behavior. Again, we do not assert that people chose the high-risk option in a deliberate effort to lose money or have an unpleasant experience. For example, postexperimental questioning by Leith and Baumeister (1996) found that people who chose the long-shot lottery did so exclusively because they wanted a chance at the large prize rather than because they wanted a bad outcome. As with other self-defeating trade-offs, choosing the long-shot lottery linked the (desirable) opportunity to pursue a large payoff with the (undesirable) increased risk of getting no money and garnering the stressful noise experience. Hence it seems appropriate to characterize the choices of our socially excluded participants as unintentionally rather than deliberately self-defeating.

Experiment 1 had a misfortune control condition, in which people were told that their future adult lives would be marred by accident proneness. Thus, they were led to anticipate some negative outcomes, but not ones that would involve social exclusion. Participants in the misfortune control condition favored the rationally optimal play-it-safe choice, with only 21% of them choosing the high-risk option. That pattern of choice did not differ significantly from the choices made by the people who were led to anticipate future acceptance, $\chi^2(1, N = 35) = 1.55$, *ns*, whereas it did differ significantly from those who were led to anticipate ending up alone, $\chi^2(1, N = 34) = 5.38$, $p < .02$. The future alone and misfortune control groups were also significantly different from each other with Bonferroni corrections applied. An analysis with all three conditions yielded significant variation among the conditions, $\chi^2(2, N = 50) = 11.83$, $p < .01$.

Lottery confidence ratings. The confidence scale ratings of the two lotteries were combined to create a single 14-point scale, ranging from 1 (*very certain of the safe lottery*) to 14 (*very certain of the risky lottery*). A one-way analysis of variance revealed significant variation among the three conditions, $F(2, 48) = 9.28$, $p < .01$ (see Table 1). A Tukey honestly significant difference

(HSD) test showed that the future alone group was significantly different from the other two groups at $p < .05$, but the future belonging and misfortune control groups were not significantly different from each other. This is consistent with the hypothesis that the future alone group would show more self-defeating risk taking than the other two groups. The effect size comparing the future belonging and future alone groups was $d = 1.56$, again a large effect size.

This pattern of results suggests that social exclusion and the resulting expectation of aloneness do amount to something different than merely another negative outcome. The accident-prone (misfortune control) group received feedback that predicted a series of bad outcomes in future life, but their behavior resembled that of people who received the forecast of future social acceptance, and it differed significantly from the behavior of people who were told they would be alone. In this study at least, expecting to be alone in life led to self-defeating behavior, whereas expecting to be accident prone did not.

Mediation by mood. Moods were rated on a single-item, holistic scale running from 1 (*very negative*) to 7 (*very positive*). The manipulation produced a significant difference in mood, $F(2, 48) = 7.72$, $p < .01$. A Tukey HSD test showed that the future belonging group ($M = 5.19$) reported significantly more positive mood than the other two groups at $p < .05$. The future alone ($M = 4.07$) and misfortune control groups ($M = 4.32$) did not differ significantly in mood ratings. In other words, both the people who were told they would end up alone and those who were told they would suffer many accidents felt significantly worse than the people who were told they would have good social connections.

The mood patterns suggest that mood alone was not responsible for the increase in self-defeating behavior. The misfortune control group produced a shift toward negative affect but not much self-defeating behavior. That is, the people expecting to be accident prone felt as bad as the people who expected to be alone in life, but they acted like the people who expected to have good social networks.

Still, the very fact that moods differed among the conditions raised the possibility that mood would mediate the increase in self-defeating behavior, at least among the future alone (vs. future belonging) participants. We conducted mediation analyses based on the guidelines outlined by Baron and Kenny (1986), using the future belonging and future alone conditions. We recast the main analysis as a correlation between condition (1 = *alone* and 2 = *belonging*) and lottery choice (1 = *safe*, 0 = *risky*). If this link was mediated by mood, then controlling for mood ought to reduce this correlation to nonsignificance. It did not. Even after controlling for mood, social exclusion condition predicted lottery choice significantly, $r(28) = .52$, $p < .01$. When controlled for exclusion condition, the correlation between mood and lottery choice was near zero, $r(28) = -.02$, *ns*. We also tested for partial mediation according to the guidelines of Kenny, Kashy, and Bolger (1998). This analysis showed no significant partial mediation ($Z = 0.07$). All of these results were similar when lottery confidence was used as the dependent variable. These results are strongly contrary to the mood mediation hypothesis. That is, if mood were an important mediator, it would correlate significantly with the dependent variable of lottery choice, and the effect of experimental condition on the dependent variable would be eliminated by controlling for the mediator. Thus, we found no evidence that changes in mood mediated the link between social exclusion and self-defeating behavior.

One might question whether the lack of correlation between mood and lottery choice contradicted the findings of Leith and Baumeister (1996). In that investigation, however, only emotional distress marked by high-arousal states led to the high-risk behaviors. Low-arousal bad moods, such as sadness, failed to produce risky behavior. The present investigation may have failed to find bad moods producing risky behavior because the manipulation of future aloneness produced low- rather than high-arousal states. Indeed, if the mood self-ratings are taken literally, social exclusion produced no emotional response at all, for the mean rating of mood was almost exactly in the middle of the 7-point scale ($M = 4.07$, with 4 as the neutral midpoint), in contrast to the mildly positive rating ($M = 5.19$) among the participants who heard a favorable forecast about their future social lives.

In sum, Experiment 1 supported the hypothesis that thwarting the need to belong would cause unintentionally self-defeating behavior. It also led to bad moods. The moods did not, however, significantly mediate the self-defeating behavior.

Experiment 2

Experiment 1 showed that a forecast of social exclusion caused self-defeating behavior. In addition, mood did not significantly mediate the effect. However, mood was measured with only one item, so it is possible that the effect of mood was not fully captured in this experiment. The one-item mood measure may have been too simple and holistic to capture mood effects that might mediate a relationship between social exclusion and self-defeating risk taking. In Experiment 2, we measured mood with a longer and more established scale—the Positive and Negative Affect Scale (PANAS; Watson et al., 1988). Thus Experiment 2 sought to replicate and extend the results of Experiment 1, using the same manipulation of social exclusion and the same measure of self-defeating risk taking (the choice between two lotteries; Leith & Baumeister, 1996).

Method

Participants. Participants were 36 undergraduates (22 men, 14 women) participating in the experiment to fulfill a course requirement in introductory psychology. They were 72% White and 28% racial minority; the average age of participants was 19.0 years. Two participants expressed suspicion about the feedback and were dropped from the analyses; thus there were originally 38 participants.

Materials and procedure. The procedure was identical to that in Experiment 1, except that the PANAS (Watson, Clark, & Tellegen, 1988) was given after the social exclusion feedback and before the lottery choice. Participants completed the personality measure and were then randomly assigned to hear either the future alone, future belonging, or misfortune control feedback. They completed the PANAS for their current mood and then the lottery choice measure. As in Experiment 1, participants chose between two lotteries and then rated their confidence in this choice.

Results and Discussion

Lottery choice and lottery confidence. Once again, future alone participants were much more likely to choose the risky lottery option (see Table 2). Bivariate chi-square analyses with

Table 2
Percentage of Participants Choosing the Risky Lottery and Certainty of Choice by Exclusion Condition in Experiment 2

Condition	Percentage choosing risky lottery	Mean certainty[a]
Future belonging	0	1.50 (1.24)
Misfortune control	17	3.00 (3.69)
Future alone	75	8.83 (4.45)
	$\chi^2(2, N = 36) = 17.54$**	$F(2, 33) = 15.45$**

Note. Standard deviations for certainty of lottery choice are shown in parentheses.
[a] Range = 1–14.
** $p < .001$.

Bonferroni corrections showed that the future alone group was significantly different from the other two groups at $p < .05$ on the dichotomous lottery choice variable, and a post hoc Tukey HSD test showed that the future alone group was significantly different at $p < .05$ from the other two groups in their lottery confidence rating. Comparing the future belonging and future alone groups on their lottery choice, $\chi^2(1, N = 24) = 14.40$, $p < .01$ (with Bonferroni correction applied), which represents an effect size of $d = 2.43$. These results are similar to those in Experiment 1, only stronger.

Mediation by mood. The main goal of Experiment 2 was to evaluate more fully the role of mood after social exclusion. The PANAS negative mood scale did not differ among social exclusion conditions, $F(2, 33) = 2.46$, $p = .10$. The misfortune control group had the highest negative mood score ($M = 13.00$), followed by the future belonging condition ($M = 11.83$) and then the future alone condition ($M = 11.25$). A Tukey HSD test showed no significant differences at $p < .05$ among the conditions. The PANAS positive mood scale also did not differ among conditions, $F(2, 33) = 0.50$, *ns*; the misfortune control group scored highest ($M = 28.83$), followed by the future belonging ($M = 27.25$) and future alone groups ($M = 26.42$).

Given these small mood differences, it seemed unlikely that mood was mediating the effect. Nevertheless, we went ahead and performed a mediational analysis, comparing the future alone and future belonging groups only. Controlling for negative mood, the correlation between social exclusion condition and lottery choice remained significant, $r(21) = .77$, $p < .01$. Controlled for positive mood, the correlation was the same, $r(21) = .77$, $p < .01$. When controlled for social exclusion condition, correlations between lottery choice and negative mood ($r = -.07$) or positive mood ($r = -.01$) were not significant. Tests for partial mediation (Kenny et al., 1998) did not show significant effects (Z for negative mood = 0.03; Z for positive mood = 0.48). These results were very similar when lottery confidence was used as the dependent variable. Thus the relationship between social exclusion and self-defeating risk taking was not significantly mediated by mood, even when mood was measured using the PANAS.

Experiment 3

Experiment 3 was designed to extend the findings of Experiments 1 and 2 using a different measure of self-defeating behavior. The dependent variable for Experiment 3 involved choosing between several pairs of healthy versus unhealthy behaviors. First, participants were given a choice of snacks, with one of them (granola) being explicitly identified as healthier (and it actually was healthier). Second, they were told that they could spend a short period of time either filling out a health questionnaire and receiving valuable feedback about their health, or merely reading entertainment magazines. Third, the experimenter offered to take either a resting pulse measure or a running pulse measure, thus implicitly letting the participant prepare by doing nothing or getting some exercise. The experimenter also noted that the running pulse furnished better and more useful information about one's health. The number of healthy choices made by the participant (from zero to three) was the measure of healthy versus self-defeating behavior.

Our hypothesis was again that thwarting the need to belong would produce an increase in self-defeating behavior. For Experiment 3, therefore, the prediction was that people would choose more unhealthy behaviors after being told they would end up alone, compared with the choices of people in either control group.

Method

Participants. The participants were 31 undergraduates (13 men, 18 women) participating to fulfill a course requirement in introductory psychology. They were 77% White and 23% racial minority; the average age of participants was 18.5 years. One participant expressed suspicion about the feedback and was dropped from the analyses; thus there were originally 32 participants. Participants were run individually and assigned randomly among conditions.

Materials and procedure. Participants completed a demographic form and the Eysenck Personality Questionnaire. They were then given the same false feedback about their personality type used in Experiment 1, with the future belonging, future alone, or misfortune control conditions.

The experimenter then presented the participants with three health-related choices. First, she said they were giving out free gifts, so they could have either a candy bar, "or, if you'd like something lower fat, a granola bar." After this choice was made, the participants were then told that they were in the control group but needed to stay in the lab about the same amount of time as the people in the experimental condition. Therefore, they could either "fill out this health questionnaire, and get feedback about how to improve your health" or they could read the magazines in the waiting area (such as *People*, *Entertainment Weekly*, and other such lightweight, pleasurable fare). Last, the experimenter said that she needed to get the participant's pulse and that this could be done either as a resting pulse or as a running pulse. She described the latter as "running in place for 2 min—you can do this by yourself. Doing the pulse that way is a better measure of how in shape you are." The participants' choices (varying from zero to three healthy choices) served as the measure of health behavior. After this, they were carefully debriefed, thanked, and dismissed.

Results and Discussion

The results of Experiment 3 provided further evidence that self-defeating behavior ensues after social exclusion. As Table 3 shows, the future belonging and misfortune control participants chose on average about twice as many healthy behaviors as the future alone participants. A Tukey HSD test showed that the future alone group was significantly different at $p < .05$ from the other two groups, which did not differ from each other. This pattern replicates and extends the findings of Experiments 1 and 2.

Another resemblance among these findings and those of Experiments 1 and 2 was that the effect of social exclusion on self-

Table 3
Number of Healthy Behaviors by Experimental Condition in Experiment 3

Condition	*M*	*SD*	*F*(2, 29)
Future belonging	2.11	0.93	5.93*
Misfortune control	1.77	0.83	
Future alone	0.78	0.83	

* $p < .01$.

defeating behavior was not small or trivial. Comparing the future belonging group with the future alone group gave an effect size of $d = 1.51$. This is similar to the effect size in Experiment 1 and again well over Cohen's (1977) lower bound of 0.80 for a large effect size.

As with the lottery choice procedure used in Experiments 1 and 2, there is no basis for characterizing the present observations as indicating *deliberately* self-defeating behavior. The unhealthy choices all offered short-term pleasures: a sweeter, more tasty snack; titillating entertainment; and an avoidance of physical exertion, respectively. We do not mean to imply that people wanted to avoid health benefits, but only that their interest in healthy outcomes was outweighed by their interest in short-term pleasures. Participants in the control conditions favored the healthy choices, but news of future social exclusion caused people to downplay health in favor of short-term pleasure, which is a hallmark of unintentionally self-defeating behaviors.

Thus, Experiment 3 replicated and extended the findings of Experiments 1 and 2. Once again, social exclusion had a large effect on self-defeating behavior; in Experiment 3, it was found on a series of choices of healthy versus unhealthy choices. Moreover, the responses in the misfortune control (accident prone) group again suggest that thwarting the need to belong produces effects that go beyond simply hearing bad news.

Experiment 4

Experiments 1–3 provide strong evidence that social exclusion can lead to self-defeating behavior. We conducted Experiment 4 to find out if social exclusion would lead to increased procrastination. Participants were given a choice between practicing for an upcoming test or procrastinating with pleasing distractions. Procrastination is a good exemplar of self-defeating behavior: When people procrastinate, they are favoring short-term pleasure over long-term goals. Recent research has found that procrastinating with frivolous, fun, and distracting activities is a strategy by which people put off their work (and the anxieties inherent in these projects) to feel better immediately (Tice et al., 2001). As noted in the general introduction, however, this strategy is ultimately self-defeating. Procrastinators, even those who claim they "work well under pressure," show significant deficits in performance compared with nonprocrastinators (Ferrari & Tice, 2000; Tice & Baumeister, 1997). In addition, procrastinators suffer increased stress and illness (Tice & Baumeister, 1997). Procrastinators do not deliberately wish harm upon themselves, but they nonetheless suffer increased stress and decreased performance as a result of their actions and choices, and so procrastination qualifies as self-defeating behavior. The results of Experiments 1–3 suggested that socially excluded participants would procrastinate more than those who received other types of feedback.

Another difference between Experiment 4 and the preceding ones was that it used yet another different measure of mood. Specifically, it used the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988). This mood scale measures both arousal and mood valence, and hence it offered yet another opportunity for investigating the possible emotional impact of the social exclusion manipulation. Our mood measures had failed to show any mediation of the self-defeating behaviors in Experiments 1–3, and so we thought that a new measure might either finally show the elusive mediational pattern or provide further converging evidence that mood is not an important mediator.

Method

Participants. Thirty-nine undergraduate students (23 men and 16 women) participated in exchange for course credit in introductory psychology. Data from 6 participants were discarded because the participants did not believe the bogus personality feedback, and data from 2 participants were discarded because they did not believe that there would be an actual test. The sample was 87% White and 13% racial minority; the average age of participants was 19.3 years.

Materials and procedure. Participants were told that the study examined the relationship between personality and nonverbal intelligence. The manipulation of social exclusion was identical to that used in Experiments 1–3: participants completed the Eysenck Personality Questionnaire and were randomly assigned to the future alone, future belonging, or misfortune control groups. Participants then completed the BMIS (Mayer & Gaschke, 1988).

The procedure for measuring procrastination was adapted from Tice et al. (2001). The experimenter informed the participants that they would be taking a test of nonverbal intelligence called the "Rosenthal Quantitative Abilities Measure" (see Tice et al., 2001). The experimenter read the participants instructions for the nonverbal intelligence test, informing them that the test would consist of arithmetic problems assessing the participant's skill on quantitative reasoning, analytical abilities, and fluid thinking. Participants were told they would have 10 min to complete as many problems as accurately as possible. The experimenter added that many people rely on calculators for arithmetic in their everyday lives and hence get out of practice at performing these calculations, so getting some practice for the test was an important help in getting warmed up to perform well.

Participants were then presented with a large stack of arithmetic problems. These two-step equations consisted of a two-digit multiplication problem divided by another two-digit number. Participants were told that previous research confirmed that practicing the equations for 10–15 min would significantly improve performance on the actual test. The experimenter explained that the participant would be left alone during the practice time and that at least some of that time should be spent practicing for the upcoming test. If participants did not want to practice for the full 15 min, they could engage in any of the other tasks that were provided for them in the room until the experimenter returned after 15 min. The experimenter motioned to a set of distracters positioned on the participant's desk, which consisted of a Tetris Gameboy (handheld video game), a puzzle, and several popular and entertaining magazines such as *Wired*, *Cosmopolitan*, and *Maxim*. The experimenter told the participants that although they should practice for some of the 15 min, they could "waste time" with the games and magazines, commenting that she often did so herself when she had extra time to waste or when her appointments did not show up. The experimenter asked whether the participant had any questions, glanced at the clock in the room, and reminded the participant that she would be back in 15 min.

The experimenter left the room and observed the participant through an adjacent one-way mirror. The one-way mirror was blocked on the participants' side by furniture, bulletin boards, and closed blinds, but the corner of one blind was folded so the participant could be observed with minimal suspicion. Every 30 s, the experimenter recorded the participant's behaviors according to three categories: practicing the math problems, procrastinating by playing the games or reading the magazines, or engaging in other activities such as staring at the clock, laying their heads down on the desk, or looking around the room. The main dependent measure was time spent doing anything other than practicing for the test (either playing the game or engaging in other activities). We also examined differences in passive (doing nothing) versus active (distraction techniques) procrastination.

After 15 min had passed, participants were asked how they felt when the experimenter had read their personality description to probe for suspicion. They were then informed that they would not be taking the actual test and that the personality description that had been read to them was randomly assigned and not true.

Results and Discussion

Main effects for procrastination. The results showed that participants who anticipated a life of social exclusion procrastinated more than those in other conditions, $F(2, 37) = 5.21$, $p < .01$ (see Table 4). A Tukey HSD test showed that the future alone group procrastinated significantly more than the other two groups at $p < .05$. The future belonging and misfortune control groups did not differ from each other. Comparing the future alone and future belonging conditions, the effect size was $d = 1.00$. Similar to the effect sizes of the other experiments, this is a large effect (Cohen, 1977).

We also examined active and passive procrastinating. Future alone participants were significantly more likely to procrastinate actively by playing a game or reading a magazine, $F(2, 37) = 4.30$, $p < .02$. Participants in the future alone condition ($M = 6.62$) procrastinated actively more than twice as long as participants in the misfortune control ($M = 2.73$) and the future belonging ($M = 2.69$) conditions. However, rejected participants were no more likely than other participants to procrastinate passively by staring off into space, watching the clock, or sitting idly, $F(2, 37) = 0.50$, *ns*. Thus the effect of exclusion on procrastination was apparently driven by the tendency for excluded people to actively seek out fun and pleasurable activities that would confer immediate gratification.

Mediation by mood. The three experimental conditions did not differ on either of the subscales of the BMIS: for the arousal subscale, $F(2, 37) = 0.15$, *ns*; for the mood valence subscale, $F(2, 37) = 0.19$, *ns*. Nevertheless, we went ahead and performed a mood mediation analysis using the Baron and Kenny (1986) guidelines. We used only the future belonging and future alone conditions for this analysis. The correlation between social exclusion condition and procrastination was still significant when controlled for both the arousal and valence subscales of the BMIS, $r(20) = .46$, $p < .03$. In addition, arousal was not correlated with procrastination when controlled for social exclusion, $r(20) = -.26$, *ns*, and neither was mood valence, $r(20) = .03$, *ns*. Tests for partial mediation (Kenny et al., 1998) did not show significant effects either (Z for arousal = 0.70; Z for valence = 0.04). All of these results demonstrate that the effect of social exclusion on procrastination was not significantly mediated by mood.

Table 4
Minutes Spent Procrastinating, by Experimental Condition in Experiment 4

Condition	*M*	*SD*	*F*(2, 37)
Future belonging	3.04	3.78	5.21*
Misfortune control	2.92	3.06	
Future alone	7.12	4.36	

Note. The maximum amount of practice time allowed was 15 min.
* $p < .01$.

Overall, this experiment shows that social exclusion causes an increase in time spent procrastinating. Socially excluded participants favored the temporary pleasures of playing games and reading magazines to the long-term benefits of successful performance on an intelligence test. This experiment further rules out the mood mediation hypothesis, as a different measure of mood (the BMIS) again produced no significant differences between conditions and no significant mediational effects.

General Discussion

In all four experiments, social exclusion led to significant changes in the person's behavior, even on dimensions that would seem to have little or nothing to do with social exclusion. In Experiments 1 and 2, the anticipation of social isolation in later life caused people to make high-risk choices that offered relatively poor prospects for good outcomes. In Experiment 3, anticipated social exclusion led people to select fewer health-enhancing behaviors. In Experiment 4, socially excluded participants procrastinated more and practiced less for an upcoming important test.

The first conclusion from these studies is that social exclusion does seem to increase a variety of self-defeating behaviors. People whose social ties have been threatened appear to become more willing to do things that are likely to produce bad outcomes for them. Indeed, the effect-size estimates from these studies suggest that social exclusion can produce large increases in self-defeating tendencies. Across these four experiments, the average effect size is $d = 1.58$, which is almost twice Cohen's (1977) cutoff of 0.80 for a large effect size.

However, these effects were not significantly mediated by mood. Across three different mood measures, socially excluded participants did not demonstrate much emotional distress. In Experiment 1, future alone participants reported a neutral mood similar to the misfortune control participants and less positive than that of the future belonging participants. Even so, the difference was small and the self-reports of the future alone participants indicated a neutral mood state rather than a negative one. Experiments 2 and 4, which used longer, more established mood measures, found no significant differences in mood across conditions. In addition, mood did not significantly mediate the relationship between exclusion and self-defeating behaviors in any of the three experiments that measured mood.

Thus, the first conclusion fit the hypotheses: social exclusion led to self-defeating behavior. The second conclusion is, however, contrary to our initial theorizing: emotional distress and bad moods did not appear to mediate between social exclusion and self-defeating behavior. Excluded individuals did not even report much

emotional distress. Moreover, several studies had a misfortune control condition in which people were told that their future lives would be marred by frequent accidents. This manipulation produced neutral moods comparable with the future alone condition, but despite having similar emotional effects, this manipulation failed to produce self-defeating behavior. Participants in the misfortune control group felt like the rejected people but acted like the accepted ones. Negative affect alone, or unpleasant feedback alone, was thus not enough to produce the self-defeating behaviors we found.

The failure to support the mood mediation hypothesis means that our theoretical understanding of these phenomena needs to be refined. Apparently, social exclusion can increase self-defeating behavior without emotion playing a substantial part. As we noted in the introduction, the need to belong is apparently quite fundamental in human motivation, and it is plausible that a strong and unexpected thwarting of this need may produce some cognitive disorientation, possibly including a loss of future orientation and a failure of rational, meaningful thought (e.g., Baumeister, 1990; Baumeister et al., in press; Pennebaker, 1989; Pennebaker et al., 1990; Wyer & Srull, 1986). This disorientation may be what impairs people's ability to self-regulate their behavior effectively and do things that will be good for them in the long run.

These results do not contradict the general conclusion that emotional distress often contributes to self-defeating behavior. They merely show that emotional distress is not necessary to produce those effects. This should not be entirely surprising, because a great deal of self-regulation appears to operate with minimal emotion, and so the regulatory system can break down in ways that have little or nothing to do with emotion. For example, Baumeister, Bratslavsky, Muraven, and Tice (1998) found that self-regulation broke down following prior exertion, but these differences were not accompanied by any apparent differences in mood or emotion.

Also, none of our findings indicate that our participants deliberately sought aversive or self-defeating outcomes. In all cases, social exclusion caused people to engage in self-defeating tradeoffs, in which they were able to pursue various positive outcomes that happened to be associated with costs. We reiterate that social psychology has not produced unambiguous evidence that normal people ever seek failure, suffering, or misfortune for its own sake (for a review, see Baumeister & Scher, 1988), and we make no claims to have changed that conclusion. Rather, self-defeating behavior arises when people pursue positive outcomes that carry substantial risks or costs. Participants in our control conditions generally resisted the tempting positive outcomes to avoid the associated risks and costs. But our socially excluded participants did not resist, and instead succumbed to the temptation of positive benefits despite the associated risks and costs. Only in that sense do we assert that they were self-defeating. Overall, the examples from the introduction seem apt: when people feel excluded from meaningful social relationships, they pursue pleasurable activities despite the unfavorable long-term consequences.

Viewed in a broader perspective, the present findings confirm the power and importance of the need to belong. The seemingly rational thing to do after any failure or setback would be to become more cautious, prudent, and watchful, so as to take care of oneself better. Yet in these studies, a setback associated with the basic need to belong produced the opposite result, namely an assortment of self-defeating behaviors that would expose the self to further risks and problems. Apparently, the desire for social connection operates at a motivational level that precedes the rational pursuit of enlightened self-interest. At the very least, our results suggest that a strong feeling of social inclusion is important for enabling the individual to use the human capacity for self-regulation in ways that will preserve and protect the self and promote the self's best long-term interests of health and well-being.

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