

## Social Exclusion Impairs Self-Regulation

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Six experiments showed that being excluded or rejected caused decrements in self-regulation. In Experiment 1, participants who were led to anticipate a lonely future life were less able to make themselves consume a healthy but bad-tasting beverage. In Experiment 2, some participants were told that no one else in their group wanted to work with them, and these participants later ate more cookies than other participants. In Experiment 3, excluded participants quit sooner on a frustrating task. In Experiments 4–6, exclusion led to impairment of attention regulation as measured with a dichotic listening task. Experiments 5 and 6 further showed that decrements in self-regulation can be eliminated by offering a cash incentive or increasing self-awareness. Thus, rejected people are capable of self-regulation but are normally disinclined to make the effort.

Human beings rely on group life for their health, well-being, comfort, and other positive outcomes. Being accepted into a social group is therefore an almost indispensable goal of human striving. Obtaining such acceptance is, however, a long and difficult task that may entail years of learning how to behave in socially acceptable ways, acquiring marketable skills, cultivating good relationships, and building a favorable reputation. To succeed at those endeavors, people must have an effective capacity for altering their behavior so as to conform to externally (socially) defined standards. That capacity is often defined as self-regulation. It is therefore plausible that one of the overarching purposes of self-regulation is to secure acceptance by others.

If self-regulation exists partly for the sake of securing and maintaining social acceptance, then social rejection may affect it. On theoretical grounds, people might respond to social exclusion with either an improvement or an impairment of self-regulation. The thrust of previous empirical findings led us to anticipate impairments more than improvements, but in principle either outcome would have been plausible and theoretically meaningful.

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#### Why Social Exclusion Might Impair Self-Regulation

Multiple studies have shown that being accepted versus rejected by social groups has a wide range of effects on individuals. Health, happiness, and well-being are strongly tied to whether one is accepted or rejected, such that people deprived of close social ties suffer more negative physical and psychological consequences than those with strong social networks (Cacioppo, Hawkley, & Berntson, 2003; Lynch, 1979; Myers, 1992). Ostracized individuals exhibit a broad range of distress and pathology (Williams, 2001).

Laboratory studies of rejection have compared the behavior of rejected participants with the behavior of those who experience social acceptance, those who encounter some other misfortune that does not entail rejection, or simple control condition participants who do not have any particular experience. Rejected people are more likely than the others to behave aggressively (Buckley, Winkel, & Leary, 2004; Twenge, Baumeister, Tice, & Stucke, 2001). They are less likely to act in prosocial ways, such as cooperating with someone or providing help (Twenge, Ciarocco, Cuervo, & Baumeister, 2003). They exhibit an assortment of cognitive deficits such as impaired logical reasoning (Baumeister, Twenge, & Nuss, 2002). They show distorted time perception, an emphasis on the present rather than the future, a seemingly lethargic passivity, and an avoidance of self-awareness (Twenge, Catanese, & Baumeister, 2003). They also exhibit self-destructive tendencies, as indicated by various increases in self-defeating behaviors such as foolish risk taking and unhealthy choices (Twenge, Catanese, & Baumeister, 2002).

Although many behavioral effects of rejection have been successfully documented in these studies, the inner processes that mediate them remain elusive. The simple initial hypothesis that

emotional distress will mediate behavioral effects has not been consistently supported, and if anything it has been more consistently disconfirmed (Twenge, Catanese, & Baumeister, 2003; Twenge et al., 2001, 2002). In many studies, rejected participants do not report emotional states that differ significantly from the states of accepted or control participants. Moreover, when differences in mood or emotion have been found, mediation analyses have suggested that emotional reactions are essentially unrelated to behavioral effects. Even laboratories that have reliably found significant main effects of social exclusion on mood or emotion have not found that it mediates behavioral outcomes (Buckley et al., 2004).

If emotion is not the essential mediator between rejection and its behavioral consequences, then what is? Other inner processes need to be investigated. Cognitions would be one candidate, but the cognitive effects of rejection documented thus far seem insufficient to explain the full range of behavioral effects. That is, rejection may impair logical reasoning (Baumeister et al., 2002), but it seems unlikely that the aggressive or antisocial behaviors of rejected people stem from faulty logic.

Self-regulation seems a more promising candidate. Self-regulation, defined as the capacity to control or alter one's responses, is a vital mechanism for producing adaptive and socially desirable behavior. If rejection could be shown to impair or undermine self-regulation, then a broad range of socially undesirable behaviors might ensue, consistent with what has already been found regarding the behavior of rejected individuals.

The hypothesis that rejection impairs self-regulation is rendered more plausible by three sets of empirical findings. First, it appears that rejection impairs intellectual performance and cognitive processing only when conscious, executive control is required. Automatic information processing, such as in rote memory, is apparently unaffected among rejected participants (Baumeister et al., 2002). Self-regulation is closely related to executive control (and, indeed, is probably one major form of it). Hence, the pattern of cognitive impairments indirectly implicates self-regulatory deficits as a possible cause.

Second, the behavioral findings contain a seeming contradiction. Rejected participants exhibit more antisocial behavior and a reduced willingness to perform altruistic, self-sacrificing actions such as helping others. Such findings depict rejected individuals as selfish. Yet other data show them also to be more self-defeating than other people. For example, rejected people take more foolish risks, make more unhealthy choices, and procrastinate more than others (Twenge et al., 2002). Selfishness and self-defeating behavior are seemingly at opposite ends of the spectrum of self-interested behavior. They both tend to involve self-regulation failures, however. Effective self-regulation is often needed to make people overcome selfish impulses and do what is best for others. Self-regulation is also needed for the pursuit of enlightened self-interest, such as enabling the person to resist impulsive temptations. The most common form of self-defeating behavior involves seeking short-term benefits that are accompanied by long-term costs, such as smoking cigarettes or even failing to delay gratification (see Baumeister & Scher, 1988; Mischel, 1974, 1996). Self-regulation may have evolved to enable people to resist such impulses and cultivate long-term gains.

Third, rejection appears to create a deconstructed mental state that may be inimical or at least detrimental to self-regulation.

Twenge, Catanese, & Baumeister (2003) found that rejected people had a distorted sense of the passage of time. Time perception is linked to effective self-regulation, and as self-regulation deteriorates, time is perceived as moving more slowly (Vohs & Schmeichel, 2003), just as it does among rejected persons. Likewise, rejection causes people to avoid self-awareness (Twenge, Catanese, & Baumeister, 2003), and self-awareness is vital for effective self-regulation (Carver & Scheier, 1981). Self-regulation also benefits from meaningful thought, such as comparison with standards (Carver & Scheier, 1981), whereas rejected people exhibit decrements in meaningful thought (Baumeister et al., 2002). Thus, again, the pattern of effects of rejection is broadly consistent with the notion that self-regulation is impaired, though direct evidence is lacking.

The broader context for this investigation is the view that human social life contains an implicit bargain. People have a strong need to belong (Baumeister & Leary, 1995), and they survive, flourish, and reproduce by means of inclusion; however, they also have naturally selfish impulses that create conflict and friction among neighbors. If people are to live together, they must curb some of these selfish impulses and make certain other sacrifices. For example, they may not want to wait their turn, respect the property of others, pay taxes, or let their children's lives be put at risk in war, but such sacrifices are often demanded by cultures. People are often willing to make such sacrifices, however, because these risks and costs are generally offset by the substantial rewards that come from belonging to the group. Living alone in the forest is not, for humans at least, a promising strategy for survival or reproduction. Hence, people employ their capacity for self-regulation to override certain selfish impulses and behave in ways that can secure and maintain acceptance in the social group.

This bargain can break down on either side, however. People who fail to control themselves properly are often rejected by others and by society. Poor self-regulators are subject to abandonment by peers, divorce, and even imprisonment. For example, people who are poor at self-regulation are less successful in accommodating to their relationship partners (Finkel & Campbell, 2001), and children with poor self-control are less accepted and less popular with peers (Maszk, Eisenberg, & Guthrie, 1999). Likewise, deficient self-regulation has been implicated as a central cause of criminality (Gottfredson & Hirschi, 1990; Longshore, 1998; McGuire & Broomfield, 1994), and most modern societies forcibly exclude criminals to the point of imprisoning them. Thus, if an individual breaks the bargain by failing to self-regulate, society may break its promise of social inclusion by rejecting that individual.

Conversely, rejection may signify that society has broken its promise, and so the person may respond by abandoning self-regulation. It is one thing to make altruistic sacrifices if they are to be compensated by the multifaceted rewards of belonging to a social group; it is quite something else to make those sacrifices if one is not going to be thus compensated. Rejection may therefore undermine the implicit social bargain on which individual self-regulation is based. This could lead to self-regulation failure in either of two ways. The impact of rejection could (at least temporarily) make the person disgruntled and therefore unwilling to make the effort and sacrifices required for self-regulation. Alternatively, the rejection might directly cause the self-regulation system to stop working, independent of any conscious or deliberate reaction by the individual. The difference is essentially one of

whether the person becomes unable or merely unwilling to self-regulate, and two experiments in the present investigation (Experiments 5 and 6) were directly concerned with this question.

### Might Rejection Facilitate Self-Regulation?

Although the present investigation was guided by the prediction of self-regulation failure, on a priori grounds one might have made the opposite prediction: Rejection might ideally serve as a stimulus to improvement in self-regulation. The basis for this prediction would be the assumption that people have a basic and strong need to belong (see Baumeister & Leary, 1995). To the extent that this is an overriding and unswerving goal, the main reaction to any experience of social exclusion or rejection would be to redouble one's efforts to secure inclusion. Insofar as self-regulation might improve one's chances for eventual social acceptance, it would be adaptive to respond to rejection with increased efforts at self-regulation.

Rejection might increase self-regulation especially in circumstances in which some aspect of the self contributed to the rejection. The procedures used in the present study and in our previous investigations seemingly locate the basis for rejection in something about the self. That is, in one procedure other group members reject the individual after meeting and talking with him or her, and in the other the exclusion forecast is based on an ostensible inventory of the person's personality. In contrast, if exclusion were based on a random procedure or on something external to the individual, self-regulation would seem useless.

Self-regulation is by definition a means of changing something about the self, most commonly to remain in line with external (social) standards. If something about the self has elicited rejection or exclusion, then the optimal response would be to change that something, which would involve self-regulation. Self-regulation would in this case be central to an effort to alter the self so as to make it more appealing to future potential partners. For these reasons, it might well be predicted that manipulations of social exclusion or rejection would stimulate and facilitate the capacity for self-regulation in the service of making oneself more acceptable to others and thereby preventing further rejection (and, possibly, of eventually reversing the most recent rejection).

To be sure, past findings have offered little encouragement to the view that people respond to rejection in adaptive, self-improving ways. Adaptive responses to rejection ought ostensibly to include increases in prosocial behavior, decreased self-defeating behavior, improved intellectual functioning, and decreased aggressiveness, but past work has yielded the opposite findings (for example, Baumeister et al., 2002; Buckley et al., 2004; Kirkpatrick, Waugh, Valencia, & Webster, 2002; Twenge et al., 2001, 2002; Warburton, Williams, & Cairns, 2003). It was mainly on the basis of these past findings, rather than any a priori theoretical grounds, that we began this series of studies looking for self-regulation failure rather than facilitation.

### The Present Research

In short, it is plausible that rejection may either impair or improve self-regulation. The present studies tested the hypothesis that social exclusion (rejection from social groups or relationships)

would cause a change in effective self-regulation and sought to illuminate how this effect might come about.

To provide converging evidence and rule out alternative explanations, we used different procedures across the first four studies. There were two manipulations of social exclusion (not being chosen by anyone in a group and getting bogus feedback that one will end up alone in life). Self-regulation was measured with four different procedures (drinking a healthy but bad-tasting beverage, impulsively eating cookies, persistence in the face of failure, and dichotic listening). Experiments 5 and 6 were follow-ups to Experiment 4, and thus they involved quite similar procedures. The goal of those final two studies was to ascertain whether manipulations of self-serving incentives (Experiment 5) and self-awareness (Experiment 6) would counteract the effect found in Experiment 4.

We also measured emotion or mood in most of these studies. As noted, our previous research has not generally shown that mood or emotional reactions mediate the behavioral effects of rejection (for example, Twenge et al., 2001). However, emotional distress has been found in other work to lead to impaired self-regulation (for example, Grilo, Shiffman, & Wing, 1989; Keinan, 1987; Rosenthal & Marx, 1981; Sayette, 1993; Tice, Bratslavsky, & Baumeister, 2001; Wegener & Petty, 1994). Given the theoretical possibility that social exclusion could produce emotional distress or bad moods, we believed that it was important to check whether such reactions might contribute to the hypothesized impairment of self-regulation.

### Experiment 1

Experiment 1 manipulated social exclusion by randomly assigning people to receive bogus feedback about the future trajectory of their social lives. Those in the crucial (future alone) condition were told, ostensibly on the basis of their responses to a questionnaire, that they would likely end up alone in life. Two control conditions were used. Participants in the future belonging condition were told that they would most likely spend the rest of their lives surrounded by people who cared about them. In the misfortune control condition, participants were told that their futures would probably be marred by a tendency to be accident prone, which would entail various injuries and other problems. The purpose of this design was to permit two types of comparison, one between anticipated social exclusion and anticipated inclusion and the other between two anticipated unpleasant futures, only one of which involved social exclusion. The latter comparison should help counteract the possible alternative explanation that any differences obtained between the inclusion and exclusion conditions reflected simply the anticipation of a pleasant versus unpleasant future.

The procedure used to measure self-regulatory failure was borrowed from previous work (Muraven, 1998). Participants were encouraged to drink a bad-tasting beverage. Because the drink tastes bad, self-regulation is required to force oneself to consume it. It is also noteworthy that the bad taste was created by vinegar, which is actually health enhancing. The need to use self-regulation to do something that is healthy but unpleasant thus resembles a great many exercises of self-regulation, such as forcing oneself to take one's medicine, to perform physical exercise when disinclined, to drag oneself out of bed despite wishing for more sleep, or to work or study instead of having fun. To increase the incentive

to drink the bad-tasting beverage, the experimenter also offered a modest financial inducement that was to be proportional to the amount drunk. By indicating that the research design was set up to reward people for drinking more, we hoped to provide a subtle legitimization of the desirability of drinking. Providing money also was intended to convey the impression that drinking might not be inherently pleasant (hence the need for extrinsic incentives).

If social exclusion impairs self-regulation, then participants in the future alone condition should be less successful than participants in other conditions on the self-regulation task. The prediction would therefore be that people would consume less of the bad-tasting beverage in the future alone condition than in either of the other two conditions. In contrast, if social exclusion facilitates self-regulation, then people in the future alone condition should consume more of the bad-tasting beverage than people in the other two conditions.

### Method

**Participants.** Participants were 36 undergraduates (24 male) taking part in connection with their introductory psychology class. Sixty-seven percent of the participants were White, and 33% were of racial minority backgrounds. Their average age was 18.7 years. Four additional participants were dropped because they rated the drink's taste as good or neutral, thereby violating the premise on which the procedure was based. One other participant expressed suspicion about the feedback and was dropped.

**Measures and procedure.** On entering the laboratory, participants first completed a short demographic questionnaire and the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975). After finishing the demographic questionnaire and EPQ, participants were given accurate feedback regarding their extraversion score. This helped to bolster the extent to which participants perceived the results of the personality test as truly indicative of their personality. Participants were then given false feedback about the implications that their extraversion would have for their future belongingness. Following a procedure developed by Twenge et al. (2001), participants were randomly assigned to one of three social feedback conditions: future belongingness, misfortune control, or future alone. Depending on their extraversion score, future belongingness participants were told: "Scoring *high or fairly high in extraversion* means that you like people and people like you. Being an extravert is a really good thing for relationships. I'll read the personality description to you" or "Being an *introvert* can be a good thing for relationships. There's been some research showing that introverts have an easier time keeping relationships together. Instead of running around meeting new people all the time, they're good at keeping the relationships they have. I'll read the personality description to you."

Regardless of their extraversion score, participants assigned to the misfortune control condition were told: "What I really notice on your questionnaire is that you score high on a scale that is correlated with being accident prone later in life. I'll read the personality description to you." Finally, depending on their extraversion score, participants assigned to the future alone condition were told: "Scoring *high or fairly high in extraversion* is a good thing for meeting people, especially when you are in college . . . but there's been some research that has shown that people who score high on extraversion have trouble keeping their relationships stable later in life" or "Being an *introvert* is not really a good thing for relationships. Once you get out of college, it is harder to meet people, so it is easier if you score really high on extraversion. If you do not it makes it more difficult to meet people. I'll read the personality description to you."

Participants were then read a personality description. Those assigned to the future belongingness condition were told: "You are the type who has rewarding relationships throughout life. You are 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, misfortune control participants were told: "You are 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."

Finally, future alone participants were told: "You are the type who will end up alone later in life. You may have friends and relationships now, but by 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 do not last, and when you are past the age where people are constantly forming new relationships, the odds are you'll end up being alone more and more." Participants subsequently rated their mood on a scale ranging from 1 (*very negative*) to 7 (*very positive*).

Participants were then seated at a table with 20 small paper cups that each contained 1 oz (29.6 ml) of vinegar drink (made with drink mix, 1 cup of sugar, 4 cups of water, and 2 cups of vinegar). They were told "This is a drink that does not taste good to most people. However, it is not harmful. In fact, it is good for you. I will give you a nickel for every ounce you drink. How much you drink is up to you." The number of ounces drunk was the primary measure of self-regulation.

After the participant drank, he or she was asked to fill out a final questionnaire including rating the drink's taste. Then followed a probe for suspicion, starting with a general question about how the participant understood the study and proceeding to more specific questions as to whether the participant suspected any deception. The goal was to ascertain whether the participant spontaneously expressed doubt or suspicion about the veridicality of the feedback (as one did). A full debriefing followed, whereafter participants were paid, thanked, and dismissed.

**Validation of measure.** The drink was meant to be distasteful; after consuming it, participants were asked to rate the drink's taste on a scale ranging from 1 (*tastes not so bad*) to 10 (*tastes really bad*). The average taste rating was 6.86 ( $SD = 1.40$ ), with 67% of participants rating the drink a 7 or higher. Thus, the drink was regarded as unpleasant by our sample.

### Results and Discussion

The main question in Experiment 1 was whether self-regulation would be impaired or facilitated among people whose belongingness needs were thwarted. Specifically, participants in the crucial condition were told they would probably end up alone in life, and we measured self-regulation by asking these people to make themselves drink a substantial amount of a bitter vinegar drink. A one-way analysis of variance (ANOVA) revealed significant variation among the three conditions as to how much people drank,  $F(2, 33) = 3.33, p < .05$ . Planned comparisons using the ANOVA mean square error confirmed the differences. The people in the social exclusion (future alone) condition consumed significantly fewer ounces of the drink than the people in the anticipated acceptance condition,  $t(33) = 2.23, p < .03, d = 0.78$ . People who anticipated being alone in life also consumed less than the people who were told they would be accident prone,  $t(33) = 2.15, p < .04, d = 0.75$ . The accident prone (misfortune control) and future belonging groups did not differ,  $t < 1, ns$ . Means are presented in Table 1.

These results provide important confirmation that some loss of self-control is one of the negative effects of social exclusion. Indeed, the difference between the exclusion and inclusion groups suggested a large effect size ( $d = 0.78$ ; see Cohen, 1977). Learning that they were likely to be alone in life apparently had a strong and substantial impact on people's ability to make themselves perform an aversive, if healthful, behavior. These results

Table 1  
*Self-Regulation, Experiments 1–3*

Experiment and measure	Future				Control			
	Alone/rejected		Belong/accepted		Misfortune		Other	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experiment 1: ounces drunk	2.31	2.81	7.91	7.69	7.50	6.83		
Experiment 2: cookies eaten	8.94	6.46	4.40	3.02				
Experiment 3: persistence	21.35	8.35	27.67	8.24	28.50	3.42	29.22	1.83

*Note.* High self-regulation is denoted by high numbers in Experiment 1 and low numbers in Experiments 2 and 3. Persistence scores for Experiment 3 are in minutes.

contradict the rival prediction that social exclusion would facilitate self-regulation.

We also investigated the role of mood and emotional distress. We found marginal trends toward differences in mood among the three conditions,  $F(2, 33) = 2.79, p < .08$ . According to pairwise comparisons (which, admittedly, lose some legitimacy insofar as the overall ANOVA failed to reach significance), the future alone and future belonging conditions differed significantly,  $t(33) = 2.02, p < .05$ , as did the future belonging and misfortune control conditions,  $t(33) = 2.11, p < .05$ . The future alone and misfortune control groups did not differ in their mood ratings,  $F < 1, ns$ . Thus, a weak pattern of differences suggested that people did feel worse after hearing that they would be alone in life than after hearing they would have good interpersonal relationships, but this slightly negative mood following the social exclusion manipulation did not differ from the mood of people who heard they would be accident prone.

Given that our manipulation seemed to have produced at least some effect on mood, we conducted the test for mediation by mood, using the future alone and future belonging conditions and following the procedures outlined by Baron and Kenny (1986). The effect of the experimental manipulation of belongingness on self-regulation (drinking) remained significant even after controlling for mood,  $r(21) = .46, p < .03$ . Furthermore, there was no effect of mood on the dependent variable once we controlled for experimental condition,  $r(21) = -.10, ns$ . Either of these findings alone would be sufficient to reject a mood mediation theory, according to Baron and Kenny (1986), and together they speak convincingly against mood mediation.

Another telling argument against the possible role of emotion was revealed in the findings from the misfortune control condition, in which mood and self-regulatory performance differed. That is, participants in that condition reported feeling like those in the future alone condition, but they acted like participants in the future belonging condition. If mood was responsible for the impairment of self-regulation, then the relatively bad moods of participants in the misfortune control condition should have impaired their self-regulatory performance too, but they did not.

Thus, Experiment 1 confirmed the prediction that social exclusion would cause a drop in self-regulation. This drop was not mediated by mood.

## Experiment 2

The main purpose of Experiment 2 was to provide converging evidence using a different manipulation of social exclusion and a

different measure of self-regulation. Experiment 1 relied on the bogus feedback procedure that manipulated social exclusion by telling people that they would eventually find themselves alone in life. In Experiment 2, we relied on a much more immediate form of social exclusion, namely rejection by peers. For this, we adapted a procedure used by Leary, Tambor, Terdal, and Downs (1995; see also Nezlek, Kowalski, Leary, Blevins, & Holgate, 1997; Twenge et al., 2001). A group of people performed a get-acquainted task, after which members were asked to rate which people they would like to work with individually. By random assignment, half of the people were told that no one had expressed an interest in working with them, which constitutes a palpable and seemingly unanimous social rejection. The rest were told that everyone had chosen them as desirable partners.

The dependent variable involved eating snack foods (cookies). In previous work, a majority of students at the university where this study was conducted rated eating cookies and other fattening snacks as an undesirable, unhealthy behavior that they would prefer to avoid (for example, Tice et al., 2001). Consumption of fattening foods is widely recognized as a growing, worldwide problem (contributing to the so-called "globesity" epidemic). Curtailing this consumption qualifies as self-regulation, because people are attracted to the pleasant taste of cookies and similar foods and must therefore overcome their desire to eat these snacks. Use of cookie abstention as a measure of self-regulation was especially appealing in the present context as a complement to the measure used in Experiment 1. If the results converged, they would show that rejection impairs self-regulation regardless of whether self-regulation is aimed at promoting or inhibiting oral consumption.

The widespread publicity devoted to dieting and slimness as well as to healthy eating has elevated public recognition of the importance of good eating habits. Binge eating, meanwhile, constitutes an important and rising pattern of pathological self-defeating behavior (Heatherton & Polivy, 1992; O'Neil & Jarrell, 1992; Stunkard, 1993). The relatively mild eating binges by which many people violate their diets and jeopardize their physical fitness are not considered pathological, but they are often recognized as reflecting similar causal processes and as being a problematic, self-defeating behavior that the individuals themselves wish they could avoid (see Brownell, 1991; Heatherton & Baumeister, 1991; Heatherton, Polivy, & Herman, 1991). In addition, the common stereotype that social rejection leads to overeating seemed to be a potentially valuable instance of the pattern we sought to demonstrate in this article.

## Method

**Participants.** Participants were 38 undergraduate students (24 male) enrolled in introductory psychology, taking part to fulfill a course requirement. The sample was 74% White and 26% racial minority, and participants' average age was 18.3 years. Three additional participants expressed suspicion about the feedback and were dropped from the analyses.

**Materials and procedure.** Participants arrived at the laboratory in single-sex groups of 4–6. They were given nametags, after which they were given both written and oral instructions to (a) learn each other's names and then (b) talk for about 20 min using a set of questions as a guide (the questions were taken from the relationship closeness induction task developed by Sedikides, Campbell, Reeder & Elliot, 1999). After 20 min, the experimenter led the participants to separate rooms, where they completed a demographic form and stated how long it had been since their last meal. They then completed a page with the following instructions: "We are interested in forming groups in which the members like and respect each other. Below, please name the two people (out of those you met today) you would most like to work with." The experimenter collected these sheets, telling the participants she would return with their group assignments.

Instead, participants were randomly assigned to be accepted or rejected by the group. The accepted participants were told: "I have good news for you—everyone chose you as someone they'd like to work with. But we cannot have a group of five (or four, or six) people, so I'll have you do the next task alone." The rejected participants, on the other hand, were told: "I hate to tell you this, but no one chose you as someone they wanted to work with. So I'll have you do the next task alone."

Participants then rated their mood on a scale ranging from 1 (*very negative*) to 7 (*very positive*). A bowl containing 35 bite-sized chocolate chip cookies was placed in front of them; the experimenter then asked them to taste-test the cookies, eating "as much as you need to judge the taste, smell, and texture." They were also given a taste-test form asking them to rate the taste of the cookies and the likelihood that they would buy a box. Such procedures are commonly used in eating research because they deflect attention from the quantity that the participant consumes and offer a legitimate rationale (that is, trying to do a good job) for eating a large amount. Participants were then left alone with the bowl of cookies and the form for 10 min.

A careful debriefing followed, with special emphasis to make it clear that the acceptance versus rejection feedback had been randomly assigned. It was explained that none of the participants in fact worked together; instead, all worked alone, having received one of the two random messages. When the participant was satisfied and expressed clear understanding that he or she had not actually been rejected, the participant was thanked and dismissed. After all participants left, the remaining cookies were counted.

## Results and Discussion

Does being rejected by a group lead to overeating? Participants in the rejection condition ate an average of almost nine cookies, as compared with about half that amount in the accepted condition (see Table 1). The difference was significant,  $F(1, 37) = 7.99, p < .01$ , and of substantial magnitude ( $d = 0.98$ ). In other words, social rejection produced a large increase in unhealthy eating.

This effect remained strong when other variables were added to the ANOVA. Controlling for group session, the rejected people still ate more than the accepted ones,  $F(1, 37) = 10.87, p < .01$ . They ate more after controlling for how much time had elapsed since their last meal,  $F(1, 37) = 7.59, p < .01$ . And they even ate more when we controlled for how good they said the cookies tasted,  $F(1, 37) = 5.77, p < .025$ . With all three variables included in the analysis, the effect of rejection on eating was still signifi-

cant,  $F(1, 37) = 8.12, p < .01$ , and indeed it was almost identical to the result of the initial, one-way ANOVA.

Thus, the main hypothesis was supported. Rejected people ate significantly more cookies. The contrary prediction, that self-regulation would be facilitated by social rejection, was directly contradicted.

Several additional findings shed light on the basis of the main finding. There was a trend suggesting that people in the rejection condition rated the cookies as better tasting than people in the accepted condition rated them,  $t(37) = 1.49, p < .15$ . The improvement in taste does not seem to have been a crucial mediator of the increased eating, however. As already reported, the increase in eating remained significant even after controlling for taste. In fact, the correlation between rated taste of cookies and amount eaten failed to reach significance among the rejected participants,  $r(18) = .24, ns$ . In contrast, taste did predict eating among the people in the accepted condition,  $r(20) = .42, p < .05$ . This suggests that accepted participants ate in relative moderation as a response to the good taste, whereas the rejected participants ate in excess regardless of taste.

Mood was significantly different between the two experimental conditions,  $t(37) = 2.50, p < .05$ . The people who had been accepted rated their moods as being slightly more favorable ( $M = 4.80$  on a 7-point scale) than people in the rejected condition ( $M = 4.06$ , which is almost precisely at the midpoint of the 7-point scale, thus literally expressing no genuine distress). A mediation analysis following the procedures recommended by Baron and Kenny (1986) failed to show that mood mediated between rejection and eating.

In fact, the correlation between mood and number of cookies eaten was negative in the rejection condition,  $r(18) = -.38, p < .13$ , but positive in the acceptance condition,  $r(20) = .25, p = .30$ . More precisely, rejected participants ate more when they felt worse, whereas accepted participants ate more when they felt better. Neither correlation was significant, but the difference between the two correlations was significant at  $p < .05$ .

A particular benefit of Experiment 2 is that it involved a different procedure for manipulating social exclusion, namely rejection by a group. This design does suffer, however, from the fact that everyone is either accepted or rejected, and thus there is no pure control group. As a result, it is impossible to know whether the observed differences were driven by the rejection or by the acceptance condition. However, all of the other studies in this investigation showed that the rejected group differs from the pure control group, whereas the acceptance manipulations usually do not. More generally, bad events have a stronger impact than good events, across a wide and diverse range of psychological phenomena (for a review, see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Hence, we think the effects are mainly due to the rejection condition.

Another interesting aspect of this procedure is that technically everyone experiences some degree of social exclusion, because everyone ends up having to work alone. Still, apparently people are quite willing to work alone cheerfully if they have just heard that everyone wanted to work with them. Working alone because everyone rejected you is apparently something quite different. Thus, apparently the social messages of acceptance and rejection were sufficient to produce very different outcomes, even though technically both led to working alone on the next task.

### Experiment 3

Our first two studies measured self-regulation in terms of consumption. That is, effective self-regulation consisted of making oneself either consume something or refrain from consuming something, in both cases contrary to one's normal and natural inclinations. The main purpose of Experiment 3 was to measure self-regulation in another sphere. For this, we used persistence on unsolvable puzzles. This has been used as a measure of self-regulation in many previous studies (for example, Muraven, Tice, & Baumeister, 1998). Unsolvable puzzles are frustrating and discouraging, and people may often be inclined to quit trying. However, persistence in the face of failure is admired in our culture and is sometimes rewarded with success, and so effective self-regulators may override the impulse to quit and instead force themselves to keep trying for a longer period of time.

The manipulation of social exclusion was the same bogus feedback manipulation used in Experiment 1. The main prediction was therefore that socially excluded participants, who were told that they would likely end up alone in life, would quit faster on the frustrating puzzles than would participants in the control conditions.

As noted, we have entertained the opposite prediction, namely that social exclusion would cause improvements in self-regulation. Given that the results of the first two studies were in the opposite direction, we do not discuss this hypothesis in connection with each subsequent experiment.

An additional feature of the design of this study was that it provided a no-feedback control group. This ensures that obtained differences are actually due to the messages of social exclusion and rejection instead of to messages of acceptance (and misfortune). It is somewhat plausible (though perhaps not parsimonious) to suggest that differences in performance could arise because feedback indicating future social acceptance energizes people to perform well and because feedback about future injuries and misfortunes also causes good performance out of a sense of adventure. If so, these two conditions would differ from the no-feedback control group, which would resemble the future alone group.

Another refinement in Experiment 3 involved our investigation of potential mediators. Although mood failed to mediate the self-regulation impairments in Experiments 1 and 2, this might conceivably have been due to our reliance on a single-item measure of mood. In this study, we used a reputable and well-validated measure of mood (Mayer & Gaschke, 1988). We also measured state self-esteem as a possible mediator. It seemed possible, a priori, that social rejection could cause reductions in self-esteem. For example, the sociometer model depicts self-esteem as an internal measure of eligibility for belongingness (see Leary & Baumeister, 2000; Leary et al., 1995). A drop in self-esteem might conceivably lead to a reduced sense of self-efficacy or in other ways an impairment of self-regulatory performance. The sociometer model could even be compatible with our central line of reasoning, according to which rejection undermines the purpose of self-regulation. That is, it might be suggested that low self-esteem signifies the belief that one will ultimately fail to maintain social acceptance, and so there is little reason to bother making the efforts and sacrifices required for self-regulation.

A final refinement for Experiment 3 was the inclusion of manipulation checks. The manipulations of social exclusion and rejection used in this investigation have been used in previous studies, but there has not been much attempt to establish that participants actually receive and understand the message of rejection. In Experiment 3, participants were asked both to state the content of the manipulation they had received and to indicate whether they believed it.

### Method

Participants were 45 undergraduates (26 female) taking part for course credit in introductory psychology. The sample was 71% White and 29% racial minority. Five participants were excluded from all statistical analyses. Two of these participants did not follow instructions, and the remaining 3 knew that the puzzles were unsolvable.

Participants began by completing the EPQ (Eysenck & Eysenck, 1975). They were then exposed to the same manipulation used in Experiment 1. Therefore, they were assigned to one of four groups: future alone (they would be alone later in life), future belonging (they would have good relationships), misfortune control (they were prone to accidents), and no-feedback control (no prediction given). Next, participants completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988) and the State Self-Esteem Scale (Heatherton & Polivy, 1991). The BMIS includes two subscales measuring mood valence and arousal.

The experimenter then introduced the task and explained that it was closely linked to overall intelligence. This spatial task involved tracing geometric figures, as used in former experimental designs (Baumeister, Bratslavsky, Muraven, & Tice, 1998). The task required the participant to fully trace a geometric figure without retracing any lines and without lifting his or her pencil from the paper. Multiple slips of paper were provided for each figure so that the person could try to trace the figure over and over. The experimenter used one such figure to demonstrate how the task worked. Each participant was then given a second figure to practice solving in front of the experimenter. Any questions a participant had were answered at that time. After this practice period, the experimenter presented two additional figures for tracing. Participants were told to try their best to complete both of the puzzles. In addition, participants were told that they could take as much time and as many trials as they wanted. Participants were informed that their performance on the task did not depend on the number of trials or time taken for completion, but only on whether they were able to trace the figures successfully. Although the two figures presented during the explanation and trial periods were solvable, the final two figures were not solvable. There was no way to successfully complete the tracing of the geometric figures given.

The experimenter left the room and timed how long the participant worked on the task before giving up (signified by the participant ringing a bell). An a priori decision was made to stop any participants still working after 30 min. (There was ample time left at the end of the session for the participant to work the full 30 min and still not be feeling that it was time to leave because the scheduled hour had elapsed.) After 30 min or on hearing the bell, the experimenter reentered the room, collected a postexperimental questionnaire, and then debriefed, thanked, and dismissed participants.

### Results and Discussion

Participants told they would be alone later in life gave up much faster on the frustrating puzzle-tracing task (see Table 1). An ANOVA focusing on task persistence indicated significant variation among the four conditions,  $F(3, 44) = 6.13, p = .002$ . People in the future belonging, misfortune, and no-feedback control groups persisted longer on the unsolvable puzzle-tracing task than

people in the future alone group. A Tukey honestly significant difference test revealed that the future alone group was significantly different from the other groups at  $p < .03$ . No differences were found among the remaining three groups. Comparing the future alone group with the other three conditions yielded a large estimated effect size ( $d$ ) of 1.31.

Persistence times were more variable in the future alone condition than in the other three conditions, which violates the assumption of homogeneity of variance. It is unlikely that the finding of significance was seriously distorted or produced by this heterogeneity, however. In fact, the longest duration in the future alone condition (26.95 min) was less than the mean persistence in any of the other conditions. Moreover, various statistical works have generally concluded that  $F$  and  $t$  tests are fairly robust with respect to small violations of homogeneity of variance (Box, 1954; Glass & Hopkins, 1996). Still, we ran a separate  $t$  test that did not assume homogeneity of variance, and it confirmed that the future alone group persisted less than the other three (combined) conditions,  $t(10.8) = 2.78, p < .05$ .

Thus, people in the future alone condition were less likely to persist on the frustrating task. They did worse than participants who received positive feedback about acceptance, worse than participants who received unpleasant feedback about future injuries and misfortunes, and worse than participants who received no feedback at all. The last result indicates that the obtained differences are probably not due to any positive effect of social acceptance feedback. Instead, the message of social rejection appears to be the crucial factor.

A possible criticism of this procedure is that quitting early on unsolvable problems is adaptive, and so quitting early might reflect good rather than bad self-regulation. This has, however, been addressed in previous work. Baumeister et al. (1998) replicated a study on ego depletion using solvable rather than unsolvable anagrams, and the same manipulation that caused shorter persistence on unsolvable anagrams (as well as decrements in other forms of self-regulation; see also Muraven et al., 1998) led to poorer performance on solvable anagrams. In the present studies, as in those previously mentioned, participants did not anticipate that some problems would be unsolvable, and so there was no basis for viewing early quitting as a product of good self-regulation. Quitting in the face of failure can therefore reasonably be interpreted as an indication of poor or depleted self-regulation.

We then explored the possible role of mood. There were no differences among the four groups in either mood valence or arousal as measured by the BMIS mood measure. Mediation analyses also disconfirmed any notion that mood mediated persistence.

The role of state self-esteem as a potential mediator was also explored. There were no significant differences among conditions in self-esteem as measured by the State Self-Esteem Scale; however, we still decided to run the mediation analyses. As noted earlier, the simple bivariate correlation between time persistence on the task and exclusion condition was  $r(43) = -.55, p < .001$ . If self-esteem mediated the path between social exclusion and task persistence, the correlation between social exclusion and task persistence should have lost significant power when controlling for state self-esteem. Contrary to the state self-esteem mediation hypothesis, the correlation between exclusion condition and task persistence was still highly significant (and almost unchanged in

magnitude) after controlling for state self-esteem,  $r(42) = -.54, p < .001$ . In addition, state self-esteem was not correlated with task persistence when controlling for exclusion condition,  $r(42) = -.10, ns$ . These findings indicate that state self-esteem did not mediate the association between social exclusion and task persistence.

As a means of ensuring that participants were paying attention to the false feedback, they were asked several questions on a follow-up questionnaire. Participants were asked what their extraversion score was, with the choices of high, medium, and low extraversion. In addition, participants were asked the prediction for their future based on that personality score. All of the members of the future belonging and future alone groups responded correctly to these two questions, and 91% of the members of the misfortune group answered correctly. Because the members of the no-feedback control group were not given any feedback about their level of extraversion or future, they were not asked to respond to these questions. Overall, results showed that participants were paying attention to the feedback given by the experimenter and retained what they were told during the experimental session. These findings confirm that the manipulation was effective.

Three additional questions were asked on the follow-up questionnaire. Participants were asked how much they thought the prediction might describe their future, how difficult the puzzle was to do, and how easy it was for them to give up on the puzzle. There were no significant differences on the ratings of the difficulty of the puzzle or the ease of giving up on the puzzle, both  $F_s < 1, ns$ . All participants rated the puzzle as quite difficult (the four cell mean ratings of difficulty ranged between 5.80 and 6.50 out of a maximum difficulty of 7).

The only significant difference on the follow-up questionnaire involved the question of whether the prediction might describe the participant's future,  $F(2, 30) = 33.68, p < .001$ . Not surprisingly, the future alone participants expressed greater skepticism than participants in the other conditions about the accuracy of the feedback they received. This is consistent with the general pattern that people are relatively more skeptical and critical of feedback that goes against what they want to believe (Lord, Ross, & Lepper, 1979).

We checked for whether differences in belief versus skepticism might have mediated persistence on the puzzles. The correlation between persistence and belief (vs. skepticism) in the feedback failed to reach significance,  $r(31) = .29, ns$ . After controlling for believability, the belongingness manipulation still significantly predicted persistence,  $r(31) = -.47, p < .01$ . Conversely, controlling for experimental condition reduced the correlation between skepticism/belief and persistence to  $r = -.18, ns$ . Thus, the main finding that rejection impaired self-regulation was independent of the rating of belief in the feedback.

In summary, Experiment 3 provided further evidence that self-regulation is impaired by social exclusion. This effect was not mediated by arousal, mood, belief in feedback, or state self-esteem.

#### Experiment 4

Experiment 4 sought to provide converging evidence from yet another domain of self-regulation, namely attention control. Experiments 1 and 2 examined self-regulation in the context of

Table 2  
Performance on Dichotic Listening Task, Experiments 4–6

Experiment and measure	Future alone		Future belong		Misfortune control	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experiment 4: basic	35.60	6.94	42.70	4.40	42.00	3.53
Experiment 5: basic (no cash)	39.30	3.71	43.50	2.00	40.00	3.94
Experiment 6: basic (no mirror)	36.50	3.40	41.60	1.81	43.17	1.50
Experiment 5: cash incentive	43.13	2.36	41.38	3.54	43.38	2.00
Experiment 6: mirror	42.60	2.15	40.60	3.50	40.50	6.14

Note. Data indicate mean tallies of stimulus words correctly identified (out of 48).

consumption behaviors, and Experiment 3 examined it in the sphere of task persistence. Cognitive control is another important sphere of self-regulation. Indeed, by some accounts (for example, Baumeister, Heatherton, & Tice, 1994; Carver & Scheier, 1981), controlling attention is a centrally important process that has powerful links to self-control success versus failure in many other spheres. For example, people seeking to regulate their sexual impulses may avoid exposure to sexual stimuli; dieters may seek to avoid cues that remind them of tempting, fattening foods; and affect regulation often involves attempting to avoid stimuli (for example, funny thoughts at a funeral) that may elicit inappropriate emotions.

In this experiment, a dichotic listening procedure was used to measure self-regulation. Information was presented simultaneously to both ears, and the participant's task required ignoring the material spoken in one ear so as to be able to screen the list of words presented to the other ear. We predicted that socially excluded participants would be less successful at this task.

### Method

Thirty right-handed undergraduates (24 women) participated in this study in exchange for partial course credit.<sup>1</sup> One additional participant was excluded as a result of expressed suspicion, and 2 participants were excluded as a result of an inability to understand the dichotic listening instructions. The sample was 61% White and 39% racial minority. Participants' average age was 18.4 years.

On entering the laboratory, participants were told that the purpose of the study was to understand better how personality relates to verbal and nonverbal performance. Participants first completed a short demographic questionnaire and the EPQ (Eysenck & Eysenck, 1975). After finishing the demographic questionnaire and the EPQ, participants were given accurate feedback regarding their extraversion score, followed by the bogus feedback manipulation as in Experiment 1. Participants were randomly assigned to the future alone, future belonging, and misfortune control conditions.

After receiving their personality description, participants completed the BMIS (Mayer & Gaschke, 1988). Participants were then told that the next portion of the study involved them completing a brief listening game. Participants were asked to sit at a separate desk in the same laboratory room on which a tape recorder and set of headphones were located. The experimenter gave the participant a recording sheet and explained (in part),

In the right ear, there will be a speech regarding a policy issue. In the left ear, you will hear a female voice speaking a series of words. Your job is to ignore the speech in your right ear and pay attention to what is going on in the left ear [and] write down each word spoken in the

left ear that contains the letter "m" or the letter "p." It is important that you pay close attention to the left ear and try your best to ignore the speech in your right ear.

In an initial version of the study ( $n = 15$ ), participants were instructed to write down words heard in the left ear that began with the letters *m* and *p* instead of all words that contained the letter *m* or *p*. This was apparently too easy, because the majority of participants in all social feedback conditions completed the task at or near perfection when only identifying words that began with each respective letter. The task instructions were therefore revised to the current form to enable meaningful comparisons of performance across conditions. However, the high success rate on the initial, easy version of the task speaks against any alternative explanation that participant performance could be explained by rebelling against the experimenter or psychologically withdrawing from the experiment itself (such as in the future alone condition).

The contents of the female voice recording were the 1,000 most frequently used words in the English language, of which the first 255 were included in the final recording. Of these 255 words, 38 contained the letter *m* and 10 contained the letter *p*. The recording sheets were then scored against a key to determine the number of words containing the letter *m* or *p* the participant had correctly identified. After completing the dichotic listening task, participants completed the Edinburgh Handedness Inventory (Oldfield, 1971), responded to a brief questionnaire designed to probe for suspicion, and were fully debriefed.

### Results and Discussion

**Dichotic listening task.** Social exclusion produced significant decrements in self-regulated attention. An ANOVA indicated that there was significant variation among the experimental conditions,  $F(2, 27) = 5.70, p < .01$  (see Table 2). Planned comparisons revealed that future alone participants performed significantly worse than future belongingness participants,  $t(27) = 2.56, p < .01, d = 1.23$ , and also significantly worse than misfortune control participants,  $t(27) = 2.67, p < .01, d = 1.17$ .

<sup>1</sup> Right-handed individuals are often recruited for dichotic listening studies as a result of their relative uniformity in left-sided language representation (Geffen & Caudrey, 1981), which is regularly associated with right-ear dominance. This right-ear advantage among right-handed individuals represents a robust effect that has been replicated in numerous studies involving the use of varying procedures (Bryden, 1988). Because the present study examined self-regulated attention after social exclusion, it was important to be sure that all participants possessed identical aural preferences in terms of their dominant and nondominant ears.

Although a diagnostic prediction of future social exclusion produced significant decrements in self-regulated attention, participants who received a negatively valenced future diagnostic forecast (for example, that of being accident prone later in life) remained essentially unaffected in their ability to regulate their attention. In fact, the performance of misfortune control participants was statistically indistinguishable from that of future belongingness participants,  $t(20) = 0.30$ , *ns*. Thus, the observed decrements in self-regulation were unique to social exclusion and not merely due to one receiving a negatively valenced diagnostic prediction about one's future.

*Mood and emotion.* To examine the alternative possibility that the observed decrements in self-regulated attention were due to emotional distress, we conducted two one-way ANOVAs using the valence and arousal subscales of the BMIS (Mayer & Gaschke, 1988) as dependent measures. According to the results of these analyses, there was no significant variation among the three social feedback conditions in terms of self-reported arousal (for example, arousal–calm),  $F(2, 27) < 1$ , *ns*, and there was marginal evidence of variation in mood valence (for example, pleasant–unpleasant),  $F(2, 27) = 2.70$ ,  $p = .08$ . With regard to mood valence, planned comparisons did reveal that future alone participants reported a less positive mood ( $M = 12.40$ ,  $SD = 8.98$ ) than future belonging participants ( $M = 21.00$ ,  $SD = 6.80$ ),  $t(27) = 2.15$ ,  $p < .05$ . They also showed a trend toward reporting a slightly less positive mood than misfortune control participants ( $M = 14.80$ ,  $SD = 8.90$ ),  $t(27) = 1.56$ ,  $p = .11$ .

Multiple mediational analyses were conducted to determine whether mood valence or arousal mediated between the social exclusion manipulation and performance on the self-regulation (dichotic listening) task. All analyses failed (in multiple ways) to satisfy the requirements for mediation. In short, neither mood valence nor mood arousal mediated the effect of manipulated social exclusion on dichotic listening.

### Experiment 5

The first four experiments provided converging evidence that social exclusion produces reductions in self-regulation. In the next two, we turned our attention to the question of why it has that effect. To be sure, we had initially focused on examining self-regulation as a possible explanation of why some of the behavioral effects of social exclusion occur, but it is always possible to seek further explanation of an explanation. In particular, it seemed essential to ascertain whether rejected people become unable, or merely unwilling, to self-regulate.

We proposed that self-regulation, which essentially involves the capacity to stifle one's own self-serving impulses so as to engage in socially desirable behaviors, serves the purpose of maintaining membership in social groups. Therefore, a rejection experience undermines the *raison d'être* of self-regulation, which in turn produces self-regulation failure. Most plausibly, this reaction would arise because the rejected person sees no need to restrain selfish or impulsive behavior, given that the rewards of such restraint (in the form of social acceptance) will not be forthcoming. A variation on this would be that some aspects of self-regulation become distasteful in the wake of rejection. In particular, self-regulation depends on self-awareness (Carver & Scheier, 1981, 1982), and self-awareness might well be unpleasant after rejection.

In either case, this line of reasoning suggests that rejected individuals could control themselves if they wanted, but they do not want to do so.

A plausible alternative, however, would be that rejection makes people incapable of self-regulation. As noted in the introduction, most of our work has failed to find emotional distress as an immediate response to rejection, even though being rejected would seemingly be an important cause of distress and anxiety (for example, Baumeister & Leary, 1995; Baumeister & Tice, 1990). One possible reason for the apparent lack of emotion is that people seek to stifle their emotional responses, either simply to avoid feeling bad or to avoid embarrassing themselves by displaying distress in front of the other people in the laboratory. Stifling emotional distress is itself a form of self-regulation; insofar as all acts of self-regulation draw on a limited resource (for example, Muraven & Baumeister, 2000), the effort to stifle emotion could deplete the resource, thereby leaving the person less capable of further acts of self-regulation. Put another way, rejection may cause people to use their limited capacity for self-regulation to regulate their emotions, leaving less capacity for other acts of self-regulation.

The hypothesis that rejection makes people incapable of self-regulation could conceivably arise in another manner. We have proposed that the purpose of self-regulation is to make one behave in a socially acceptable manner, and thus rejection undermines the basic reason for self-regulating. It is possible that this connection is hard-wired, and so an experience of rejection renders the person incapable of self-regulating.

The procedure for Experiment 5 was based on that of Experiment 4. We manipulated social exclusion using the bogus feedback manipulation and measured subsequent self-regulation with the same dichotic listening task. The main change in Experiment 5 was to provide some of the participants with a motivating reason to self-regulate, namely a cash incentive for accurate performance on the dichotic listening task. If rejected people are incapable of self-regulating, then the offer of money for effective self-regulation should make no difference. In contrast, if they are merely unwilling to self-regulate for the sake of fitting with others, then offering them a self-serving incentive to perform well could be enough to make them self-regulate effectively.

### Method

*Participants.* Fifty-one right-handed undergraduates (41 women) participated in this study in exchange for partial course credit. Two additional participants were excluded from the analyses, one who expressed suspicion about the feedback and one who exhibited an inability to understand the directions for the dichotic listening task. The sample was 82% White and 18% ethnic minority. Participants' average age was 19.0 years.

*Materials and procedure.* Participants entered the laboratory and completed the EPQ (Eysenck & Eysenck, 1975). After completing the EPQ, participants were exposed to the same social feedback manipulation used in Experiment 1. After receiving their future diagnostic forecast of exclusion, belongingness, or proneness to accidents, participants completed the BMIS mood measure.

When participants had finished reporting their mood, the experimenter instructed them to sit at a desk at the opposite end of the laboratory room. The desk contained a tape recorder and a set of headphones that participants were told would allow them to complete a brief listening game. Participants then received the same instructions and materials for the dichotic listening task that were used in Experiment 4.

Participants were also randomly assigned to either a pay or a no-pay condition. Participants assigned to the no-pay condition received the standard dichotic listening instructions used in Experiment 4. Participants assigned to the pay condition, however, received the standard dichotic listening instructions and the following additional instructions from the experimenter:

We are also offering a monetary reward for performance on the listening game. If you correctly identify 62% of the words in the left ear that contain the letter "m" or "p," we will pay you \$5. If you correctly identify 82% of the words in the left ear that contain the letter "m" or "p," we will pay you \$10. Finally, if you correctly identify 100% of the words spoken in the left ear that contain the letter "m" or "p," we will pay you \$20.

To boost the credibility of the payment, the experimenter showed each participant assigned to the pay condition an envelope filled with the money that would be used to pay the participant for his or her successful performance. The experimenter also put a \$5 bill on the participant's desk when describing what would be required to earn the \$5 reward, another \$5 bill for the \$10 reward, and two additional \$5 bills for the \$20 reward. Participants were not told the exact number of words they would have to identify to receive each monetary reward sum, the reason being that they might lose motivation and relax after reaching one goal or on realizing they would not reach the next goal.

After completing the dichotic listening task, participants completed the Edinburgh Handedness Inventory and a brief suspicion probe. Then they were fully debriefed.

## Results and Discussion

*Dichotic listening performance.* The main question of Experiment 5 was whether offering a financial incentive for good performance on the self-regulation task would offset the negative effects of exclusion. Consistent with an answer of yes, a  $2 \times 3$  ANOVA yielded a significant interaction between payment condition and the exclusion manipulation,  $F(2, 45) = 4.72, p < .01$ . The results are summarized in Table 2. Planned comparisons confirmed the benefits of pay in overcoming the effects of social exclusion. Future alone participants who were motivated to earn a monetary reward performed significantly better than nonpaid future alone participants,  $t(16) = 2.41, p < .02$ . The cash incentive also improved the performance of misfortune control participants,  $t(15) = 1.99, p = .05$ , but it had no effect on the performance of participants in the future belonging condition,  $t < 1, ns$ .

To clarify the interaction, we conducted further analyses. A one-way ANOVA focusing on the three nonpaid conditions indicated significant variation among these conditions,  $F(2, 24) = 3.76, p < .04$ . Planned comparisons demonstrated that nonpaid future alone participants regulated their attention significantly worse than nonpaid future belonging participants,  $t(24) = 2.47, p < .02, d = 1.41$ , but no differently from the nonpaid misfortune control participants,  $t < 1, ns$ . These findings provide a replication of what we found in Experiment 4.

A parallel one-way ANOVA was then conducted on the paid conditions, and it revealed no significant variation among conditions,  $F(2, 21) = 1.29, ns$ . Pairwise comparisons likewise revealed no differences between conditions. As Table 2 shows, the future alone participants who had the cash incentive performed quite well.

These results suggest that self-regulation deficits following rejection indicate an unwillingness, rather than an inability, to reg-

ulate the self. When rejected people were offered a self-serving incentive to self-regulate, they self-regulated effectively. Apparently the capacity to self-regulate remained intact, but the normal motivation to self-regulate was diminished. Providing a cash incentive offset the negative effect of social exclusion.

Precisely how the cash incentive counteracted the impact of rejection cannot be gleaned from these data. It is possible that it had attentional (distraction), emotional (good news reducing negative affect or increasing positive affect), or motivational (a new goal toward which to strive) effects. Distraction alone seems an unlikely explanation, insofar as many previous studies have moved participants' attention on to a new task but still revealed decrements in self-regulation (for example, Baumeister et al., 1998; Muraven et al., 1998). It is possible that the unwillingness to self-regulate is rooted in negative affect, which was attenuated by the offer of money, though as we saw in the earlier studies negative affect has not mediated the effects of our rejection manipulations generally. The money almost certainly served as a motivational goal that provided a subjectively compelling justification for increased effort. In any case, the most important conclusion from these data is that rejected people remain capable of self-regulation, though they need something (for example, money) to induce them to put forth the requisite effort.

*Mood and emotion.* A one-way ANOVA revealed significant variation among the three social feedback groups in terms of self-reported mood valence,  $F(2, 48) = 4.32, p < .02$ . Planned comparisons revealed that participants in the future alone condition rated their mood as significantly less pleasant (that is, low in mood valence;  $M = 13.28, SD = 12.00$ ) than future belonging participants ( $M = 24.80, SD = 12.70$ ),  $t(48) = 3.00, p < .004, d = 0.93$ . Future alone participants also had a marginally more negative mood than the misfortune control participants ( $M = 19.80, SD = 8.53$ ),  $t(48) = 1.61, p = .09, d = 0.63$ . A one-way ANOVA focusing on the arousal subscale yielded no significant variation among conditions,  $F < 1, ns$ . Mediation analyses showed that neither valence nor arousal mediated the link between social exclusion and dichotic listening performance.

## Experiment 6

The results of Experiment 5 pointed toward the conclusion that rejection makes people unwilling, rather than unable, to regulate themselves effectively. Experiment 6 sought to replicate this conclusion using a different procedure and, assuming replication, to shed possible light on the causal process by which rejection undermines self-regulation.

Whereas Experiment 5 counteracted the effects of rejection by offering a new motivation for effective self-regulation, Experiment 6 sought to counteract those effects by seating some participants in front of a mirror during the dichotic listening task. Mirrors have long been used in laboratory research to direct participants' attention to themselves (for example, Carver & Scheier, 1981; Duval & Wicklund, 1972). Thus, Experiment 6 investigated whether self-focused attention might improve self-regulation among rejected participants.

Self-focused attention has long been linked to self-regulation. Carver and Scheier (1981, 1982) proposed that the purpose of self-awareness is to serve self-regulation, insofar as self-awareness involves a comparison of the self's current state against relevant

standards such as social acceptability and personal ideals. In laboratory work, increasing self-awareness appears to improve self-regulation (for example, Carver & Scheier, 1981, 1982; Sentyrz & Bushman, 1998). Self-awareness is also a state that involves thinking about how recent and current events reflect on the self (Hull & Levy, 1979). When events reflect badly on the self, people may seek to avoid or escape self-awareness (for example, Baumeister, 1990, 1991; Greenberg & Musham, 1981; Heatherton & Baumeister, 1991).

Being rejected or excluded is one event that should make self-awareness aversive. People may enjoy thinking about what a success experience means about the self, because those implications would be flattering to the self. In contrast, a failure or rejection experience more likely signifies a possible fault, inadequacy, or misdeed, any of which would reflect badly on the self. At least one previous finding suggested that an experience of social exclusion causes people to want to avoid self-awareness, as reflected in an unusually strong avoidance of seats facing mirrors (Twenge, Catanese, & Baumeister, 2003).

Thus, rejection may make people avoid self-awareness because it is aversive to think about what possible faults in themselves may have caused the rejection. Insofar as self-regulation depends on self-awareness, however, a side effect of avoiding self-awareness would be an impairment in self-regulation. If that is correct, then stimulating self-awareness by placing participants in front of a mirror should counteract the impact of rejection.

In contrast, if social exclusion renders people incapable of self-regulation, then placing them in front of a mirror should have little or no effect. If anything, it could cause a further impairment on the dichotic listening task, because the sight of one's own reflection in the mirror should draw attention away from the listening task, leaving less attention available for tracking the stimulus words.

## Method

**Participants.** Forty-five right-handed undergraduates (37 female) participated in this study in exchange for partial course credit. Nine additional participants were excluded from the analyses because they expressed suspicion about the feedback, 1 participant was excluded as a result of an inability to understand the instructions for the dichotic listening task, and 1 participant was excluded as a result of previous participation in a study involving the same rejection manipulation. The sample was 60% White and 40% racial minority. Participants' average age was 18.6 years.

**Measures and procedure.** Participants entered the laboratory individually to take part in a study ostensibly concerned with the relationship between personality and verbal and nonverbal performance. After providing informed consent, participants completed a brief demographic questionnaire and the EPQ. By random assignment, they received the future alone, future belonging, or misfortune control feedback, as in the preceding studies. After this, they completed the BMIS mood measure.

When participants had completed the BMIS, they were told that the next part of the study required that they sit at a desk at the opposite end of the room for a listening game. Participants were randomly assigned to either a high self-awareness or low self-awareness condition. Participants assigned to the high self-awareness condition sat at a desk that faced a 12-in.  $\times$  36-in. (30.5-cm  $\times$  91.5-cm) mirror. Low self-awareness participants, on the other hand, sat at the same desk, but the mirror was turned around and had a sign attached to the back that read "Being used for another study. Please do not move." The desk contained a tape recorder and a set of headphones. Participants were given a recording sheet and instructions for

the listening game. The instructions and materials for the dichotic listening task were the same as in Experiment 4. After participants had completed the listening game, they completed the EHI and a suspicion probe and were then thoroughly debriefed.

## Results and Discussion

**Dichotic listening performance.** The main question of Experiment 6 was whether increasing self-awareness by placing people in front of a mirror would counteract the negative effect of social exclusion on self-regulation. To test this, we conducted a  $2 \times 3$  ANOVA on performance on the dichotic listening task. This analysis revealed a significant interaction between mirror and exclusion feedback,  $F(2, 39) = 5.61, p < .007$ . The results are shown in Table 2.

Planned comparisons confirmed that increasing self-awareness offset the impact of social exclusion. Among participants who received the future alone feedback, those in the mirror condition outperformed those in the control (low self-aware) condition significantly,  $t(39) = 2.79, p < .01$ . In contrast, the mirror did not significantly improve the performance of either the misfortune control or the future belonging participants (both  $ts < 1, ns$ ).

The low self-awareness condition replicated the results of Experiment 4 (and the no-pay condition of Experiment 5). A one-way ANOVA focusing on dichotic listening performance scores indicated significant variation among the three feedback conditions,  $F(2, 16) = 13.33, p < .0001$ . Planned comparisons revealed that future alone participants low in self-awareness identified significantly fewer words than did future belongingness participants low in self-awareness,  $t(16) = 3.23, p < .0001, d = 1.90$ . In addition, future alone participants low in self-awareness performed significantly worse than misfortune control participants low in self-awareness,  $t(16) = 2.68, p = .001, d = 2.54$ . The effect sizes for these observed differences in dichotic listening performance among low self-awareness participants were considerable, exceeding the standard criteria for large effects (Cohen, 1977).

In contrast, a one-way ANOVA focusing on the mirror condition failed to show any variation among conditions as a function of social feedback,  $F(2, 23) = 0.59, p < .56$ . Also, pairwise comparisons revealed no significant differences.

Thus, putting people in front of a mirror effectively counteracted the impact of the social exclusion manipulation. Experiments 4, 5, and 6 all showed that rejected people performed worse than participants in the other conditions on the dichotic listening task. However, both Experiments 5 and 6 also reversed this pattern, either by providing a cash incentive for good performance (Experiment 5) or by stimulating self-awareness (Experiment 6). Apparently people are still capable of self-regulation after rejection, but they are disinclined to self-regulate effectively in response to external demands. Experiment 6 suggests that the particular reason socially excluded people do not want to self-regulate is that they avoid self-awareness. Making them self-aware counteracts this effect.

**Mood and emotion.** To investigate whether mood and emotional response influenced self-regulation, we conducted two one-way ANOVAs using each subscale of the BMIS as a dependent measure. Results from these analyses indicated that there was no significant variation among the social feedback groups in terms of either self-reported mood arousal,  $F(3, 42) < 1, ns$ , or mood valence,  $F(3, 42) < 1, ns$ . Not surprisingly, mediation analyses

revealed no evidence that mood mediated the effect of the manipulations on self-regulation.

### General Discussion

Most societies and social groups occasionally reject individuals, and one common cause of rejection is failure at self-regulation. That is, people who are unreliable, who act on selfish impulses, who break moral or legal rules, who fail to keep promises, who subject others to emotional outbursts, who exhibit inappropriate aggressive actions, and who in other ways fail at self-regulation are often rejected or excluded by others. In such a context, the optimal or adaptive response to social exclusion might be to try to increase one's self-regulatory performance. More generally, rejection often is based on some undesirable trait or behavior, and so the most adaptive response would be to seek to remedy that failing, toward which self-regulation—defined as the capacity to change oneself and one's responses—would be instrumental. Hence, one might predict and hope that social exclusion or rejection would stimulate a broad tendency to improve self-regulation.

Against that line of reasoning, the present studies consistently showed that self-regulation suffered in the wake of social exclusion. Rejected or excluded participants performed worse on an assortment of self-regulation tasks. Our investigation manipulated social exclusion in the form of bogus feedback indicating that the person would likely end up alone in life (Experiments 1, 3, and 4–6) and in the form of telling participants that no one else in their group had wanted them as an interaction partner (Experiment 2). These experiences of social exclusion rendered people less able to make themselves drink a healthy but bad-tasting beverage (Experiment 1); more prone to eat unhealthy snack foods (Experiment 2); more prone to give up quickly at a frustrating, discouraging puzzle task (Experiment 3); and less able to counteract distraction so as to identify target words out of a stream of incoming verbiage (Experiments 4–6).

Thus, instead of stimulating the seemingly adaptive and socially desirable response of better self-regulation, rejection seems to elicit the opposite. Our two final experiments were designed to shed some light on why socially excluded people may be poor at self-regulating. Experiment 5 suggested that they become unwilling, rather than unable, to self-regulate. Given a compelling (cash) incentive, the excluded participants were able to self-regulate effectively after all. If the rejection experience had in some way damaged or impaired their capacity for self-regulation, they would not have been able to perform so well, even to earn money. Apparently the capacity for self-regulation remains intact after social exclusion, but the excluded person ordinarily does not want to put forth the effort or make the sacrifices that self-regulation often requires.

Why might self-regulation become more distasteful in the wake of rejection? Experiment 6 indicated that self-awareness may be a contributing factor. Effective self-regulation requires a certain degree of self-awareness to supervise the process of monitoring and changing the self (Carver & Scheier, 1981): It is difficult to alter the self to bring it into line with goals and standards if one cannot be aware of where the self stands in relation to those standards. But rejection makes self-awareness aversive, probably because it would direct thought toward what deficiencies in the self might have elicited the rejection (Hull & Levy, 1979; Twenge,

Catanesse, & Baumeister, 2003). The implication is that excluded people are disinclined to think about themselves, and the avoidance of self-awareness undermines self-regulation. In Experiment 6, in which self-awareness was stimulated by placing participants in front of a mirror, participants self-regulated effectively even after social exclusion.

Self-regulation tends to be adaptive in most situations, and so it is difficult to put a positive spin on the responses exhibited here. The remarkable human capacity for self-regulation may have developed in part to help people curb selfish, impulsive, and otherwise socially undesirable actions so as to be able to coexist and cooperate with other human beings in a complex, interdependent society. Undoubtedly, though, self-regulation has costs and can be aversive, because it depends on focusing attention on the self's shortcomings to remedy them, because curbing selfish impulses means not getting what one wants, and because altering the self requires effort. One may be willing to bear these costs to the extent that they accompany the substantial rewards of social acceptance and belongingness. When those promised rewards are withheld, however, one loses that willingness.

### Alternative Explanations

Before concluding that social exclusion leads to decrements in self-regulation, it is necessary to consider several possible alternative explanations. A first possibility, which was anticipated in the design of these studies, was that social exclusion or rejection simply constitutes a form of bad news. If this view is correct, it would indicate that receiving unpleasant feedback is the operative cause of self-regulation failure, and so the present results (though correct as far as they go) would not really indicate anything specific about social exclusion. Theory should focus on the impact of negative feedback rather than on a thwarted need to belong. However, this explanation is contradicted by the results of our misfortune control condition in these studies. Participants in that condition received bad news (that is, they would be accident prone, and so their future lives would be marred by frequent experiences of pain and injury), but, unlike the participants who received the social exclusion feedback, they did not respond with failed self-regulation.

There is ample evidence in previous work that emotional distress leads to self-regulation failure (for example, Grilo et al., 1989; Keinan, 1987; Rosenthal & Marx, 1981; Sayette, 1993; Tice et al., 2001; Wegener & Petty, 1994), and in fact we had originally thought that many of the effects of social exclusion would be mediated by emotional reactions. On an a priori basis, it was highly plausible that social rejection could cause emotional distress, which in turn would lead to poor self-regulation. This would not invalidate our results but would affect their interpretation. However, multiple findings contradict the view that emotional distress is an important factor. In the present investigation (and in our previous studies), there was not much evidence that social exclusion produced emotional distress. Even when emotion or mood did differ significantly as a function of social exclusion, it did not mediate self-regulation failures, and indeed the mediation analyses generally failed on all counts, any one of which would have been sufficient to reject a hypothesis of mood mediation. Furthermore, participants in the misfortune control condition typically reported moods resembling those of participants in the social

exclusion (future alone) condition, but they behaved in the same manner as people in the future belonging condition. If mood mediated self-regulation failure, the bad moods in the misfortune control condition should have led to poor self-regulation, but they did not.

The finding that social exclusion did not produce emotional distress is itself perhaps a reason for concern, insofar as one might expect on a priori grounds that being excluded or rejected by others would lead to emotional distress. We have four explanations for the lack of apparent emotional response, all of which could be true simultaneously. First, we generally measured emotion directly after the exclusion or rejection feedback, whereas many emotions take some time to build. We suspect that if we had measured emotion an hour or two later (and not debriefed participants as to the bogus nature of their exclusion feedback), we might well have found more emotion. Second, participants in our studies receive the exclusion feedback rather unexpectedly. Mostly they had no inkling that they were going to receive such unwelcome news until the experimenter actually gave it to them. In contrast, many rejections in everyday life can be anticipated, such as when one is waiting for decision letters from graduate or medical schools (or journal editors, for that matter) or during fraternity or sorority rush, in which everyone knows when the bids (and, by extension, the rejections) will be communicated. The anticipation of feedback about social acceptance and rejection allows suspense and arousal to build and could prepare the person to have an emotional response ready.

Third, the slight majority of most of our research participants have been men, and it is possible that men either do not know or do not admit to the full extent of their emotions, whereas female samples might report more extreme emotions and therefore furnish enough variation to permit more sensitive tests of hypotheses about emotion (LaFrance & Banaji, 1992). Consistent with this view, we found at least some significant variation in mood valence or positivity in Experiment 4, which had the highest proportion of female participants. Fourth, it is also possible that the immediate response to social rejection is a state of cognitive deconstruction that includes emotional numbness (see Campbell, Baumeister, Dhavale, & Tice, 2003; Twenge, Catanese, & Baumeister, 2003). In any case, though, emotion and mood do not appear to play a mediating role in the behavioral outcomes of social exclusion that we have studied.

Another potential alternate explanation of our findings is that the initial manipulations of rejection or exclusion caused participants to adopt a negative, hostile, or resentful attitude toward the research project, and as a result they were less cooperative on the second task than they otherwise would have been (and less cooperative than control condition participants). Such an alternate explanation could be leveled at a great many manipulations in social psychology and is difficult to rule out definitively. However, there are some signs that it may be false. For one thing, there was no sign of resentment or hostility displayed on the manipulation checks, nor did such comments emerge in the debriefings of participants. For another, the decrements in self-regulation were not uniform enough to be compatible with a resentment explanation. Experiment 4 was initially attempted with a somewhat easier version of the dichotic listening task. Specifically, participants in the first version were instructed simply to list words they heard that began with *m* or *p*, as opposed to having those letters any-

where inside them. Resentful participants presumably would have refused to list those words just as earnestly as they might have refused to list the harder words, but in the easier version of the task there was no difference in performance as a function of exclusion feedback. Nearly all participants in the future alone condition correctly identified all of the target words, which suggests that they were not refusing to comply with instructions or detaching themselves from their assigned task.

Yet another possibility is that the feedback of social exclusion was so impactful, puzzling, or threatening that participants devoted much time and effort to thinking about it, such as mentally reviewing counterarguments and trying to refute it. In essence, the impact of the exclusion manipulation was to distract participants, thereby impairing subsequent information processing. This might have interfered with their performance on subsequent tasks. The present investigation did not directly address this possibility, but it was in fact a central concern in a previous investigation conducted by Baumeister et al. (2002). That investigation was focused on the cognitive effects (including intelligent performance) of social exclusion and involved methods similar to those used in the present studies. The pattern of results there contradicted the distraction hypothesis in multiple ways. If rejected participants were distracted, they should have shown decrements in noticing and encoding information, but they did not. Excluded and rejected people were quite capable of processing information and attending to external stimuli, and indeed the only intellectual decrements were observed on tasks that required active, effortful management. Another objection to this alternative explanation is that if excluded participants were distracted by preoccupation with how to think about the rejecting feedback, then focusing their attention on themselves with a mirror (in Experiment 6) should have exacerbated the effect; in fact, we found the opposite, namely that the mirror wiped out the effect.

A final alternate explanation might be that the primary effect of rejection is to lower self-esteem. A reduction in self-esteem might conceivably engender lower confidence in one's ability to perform well, which might in turn have produced some of the present findings. Experiment 3 specifically investigated the possibility of mediation by changes in state self-esteem. As that study revealed, state self-esteem was not reliably altered by the exclusion manipulation, nor did it have a clear effect on the dependent measure of self-regulation. State self-esteem does not appear to have been a factor.

### *Concluding Remarks*

Five years ago, a group of us set out on this line of work from the basic assumption that the need to belong is a basic, pervasive, and powerful motivation. We reasoned that thwarting that need would lead to emotional distress, which in turn would produce a variety of behavioral effects. In empirical tests, we repeatedly found the behavioral effects but no sign of emotional distress or of a mediating role for emotion. Hence, despite what were often very large effects on behaviors, the inner processes following from social exclusion or rejection remained unknown.

The present investigation moves toward a new and different understanding of the relevant inner processes that ensue when the need to belong is thwarted. Specifically, we found, across six studies, that self-regulation is substantially impaired among people

who have just received news of social rejection or future exclusion. Self-regulation was measured in terms of consumption, persistence, and attentional control, and the convergence across these very different types of self-regulation points to a general impairment of the capacity for self-regulation.

In our view, the broader implication of these results is that much of self-regulation is a costly, effortful, and therefore fragile process. The immense advantages and rewards that flow from social acceptance may make people normally willing to tolerate the costs and sacrifices that self-regulation requires. But people may lose that willingness when social acceptance and its rewards are not forthcoming.

Past work has shown that socially excluded individuals exhibit increased aggression, poorer intellectual performance, a loss of prosocial behavior, and a susceptibility to self-defeating behavior patterns. At the societal level, and at multiple points in history, groups and categories of people who have felt excluded by the dominant culture have shown sadly similar patterns as reflected in high crime rates, underperformance in schools and intellectual life, withdrawal from positive contributions to the general societal good, and elevated rates of substance abuse, suicide, and other self-destructive patterns. The present findings suggest what may be a common underlying process. Effective self-regulation allows individuals to control and alter their behavior so as to resist temptations, stifle socially undesirable impulses, follow rules, pursue enlightened self-interest despite short-term costs, and make positive contributions to society. As such, individual self-regulation is essential to one's own well-being as well as that of others. Messages of rejection or exclusion can cause people to be less willing to make the exertions and sacrifices needed for effective self-regulation, with potentially tragic results for both themselves and others. Though our findings are hardly adequate for prescribing social change, they do lend support to the view that promoting a more widely inclusive society, such that fewer groups or individuals feel left out, would reduce the extensive harm and heartbreak that often follow from self-regulation failure.

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