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# Rejection Elicits Emotional Reactions but Neither Causes Immediate Distress nor Lowers Self-Esteem: A Meta-Analytic Review of 192 Studies on Social Exclusion

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*Competing predictions about the effect of social exclusion were tested by meta-analyzing findings from studies of interpersonal rejection, ostracism, and similar procedures. Rejection appears to cause a significant shift toward a more negative emotional state. Typically, however, the result was an emotionally neutral state marked by low levels of both positive and negative affect. Acceptance caused a slight increase in positive mood and a moderate increase in self-esteem. Self-esteem among rejected persons was no different from neutral controls. These findings are discussed in terms of belongingness motivation, sociometer theory, affective numbing, and self-esteem defenses.*

**Keywords** *meta-analysis, social rejection, ostracism, self-esteem, affect*

One does not have to look far to find evidence that people value the formation and maintenance of social bonds. Weddings are celebrated joyfully, whereas divorces bring pain and sadness (e.g., Lucas, 2007; Mastekaasa, 1997). Millions watch reality television shows that build every episode around excluding someone from a group. Hospital patients with active social support networks recover faster than those with little social support (e.g., Hawkey & Cacioppo, 2003; Mitchinson, Kim, Geisser, Rosenberg, & Hinshaw, 2008; Reifman, 1995).

Subjective well-being is low among people who are alone in the world (e.g., Chappell & Badger, 1989; Pinquart & Sorensen, 2000; Windle & Woods, 2004).

Psychological theory has affirmed the importance of social connection. Most major theories of personality have posited that a basic, innate motivation to form relationships is an influential aspect of the human psyche (e.g., Adler, 1927; Deci & Ryan, 2000; Freud, 1926/1936; Maslow, 1954). Indeed, it is difficult to find or even imagine a theory of personality that steadfastly denied that humans have strong affiliative tendencies. Evolutionary psychologists have emphasized that forming and maintaining dyadic alliances (e.g., romantic relationships and friendships) and larger coalitions would have

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conferred substantial benefits to both survival and reproduction (Buss & Kenrick, 1998; Caporael, 1997, 2001a, 2001b; Dunbar, 1998; Lewin, 1993; Poirier & McKee, 1999). Cultural, socializing influences likewise generally promote the value of getting along with others, holding families together, and being a good member of the group. Whatever else they may be, humans are indeed social animals (Aronson, 1972).

The purpose of this meta-analysis is to compile evidence about what happens when this drive to form social bonds is blocked or thwarted, as well as what happens when it is newly satisfied. We focused mainly on laboratory studies of interpersonal rejection, ostracism, and other forms of social exclusion. If the drive to form and maintain social connections is a basic, powerful force in human motivation, then being rejected or excluded ought to elicit negative reactions, and being accepted ought conversely to produce positive reactions. Two categories of reactions, emotion and self-esteem, were emphasized in this review.

### Definitions

Although the term *rejection* has been widely used to discuss a broad set of phenomena, its literal meaning refers specifically to a refusal of social connection. The implication is that one person seeks to form and maintain at least a temporary alliance or relationship with someone else, and that other person says no (at least implicitly). The term *social exclusion* is thus a broader, more encompassing term, insofar as it denotes all phenomena in which one person is put into a condition of being alone or is denied social contact. The difference lies principally in how specifically the excluded person has sought the connection. Rejection implies that the person tried to form the bond or wanted it, whereas social exclusion does not (except, and this is a relevant exception, insofar as the theory of human motivation assumes that all people generally want to be socially accepted and included).

The term *ostracism* has also been used in research. Ostracism refers to targeted refusals of social interaction, such as by repeatedly and intentionally not replying to someone who attempts to converse. A common manipulation involves having a research participant play a computer-simulated ball-tossing game, such that in the ostracism condition, the simulated partners suddenly and without explanation cease to throw the ball to the participant. Although ostracism is often treated as another form of social exclusion (and we shall include it in our analyses), Williams (2001, 2007) has argued that ostracism has multiple effects and implications that could dilute its relevance to the study of social exclusion. Specifically, he has proposed that being ostracized thwarts the desire for control and reduces the perception that life is meaningful. If that is correct, then any

consequences of ostracism cannot clearly be attributed to thwarting the need to belong, insofar as they might stem from frustrating the drives for control and meaningfulness. For example, ostracism in principle could cause a form of learned helplessness (cf. Seligman, 1975).

Assessing all the possible effects of ostracism was beyond the scope of this article. However, we were alert to the hypothesis that ostracism has effects beyond those of other manipulations of rejection. If ostracism blocks multiple needs whereas other forms of social exclusion are specific to the need to belong, then one would predict that reactions to ostracism would differ either qualitatively or quantitatively from the effects of other manipulations.

## THEORY AND HYPOTHESES

In this section, we derive the central hypotheses that were tested in this meta-analysis. These concern the effects of social exclusion on emotion and on self-esteem.

### Emotion

The prediction that social exclusion will cause emotional distress seems straightforward, intuitively compelling, and theoretically unavoidable. Emotional reactions are widely assumed to reflect motivationally relevant outcomes. People are strongly motivated to garner acceptance and form social attachments (e.g., Baumeister & Leary, 1995). Social exclusion thwarts this need to belong, by definition. Therefore, exclusion should cause emotional distress, and acceptance or inclusion should cause positive emotional reactions.

The first prediction was thus that all forms of social exclusion would cause emotional distress. That is, rejection, ostracism, and other forms of exclusion would make people feel bad in possibly assorted ways. Conversely, social acceptance ought to cause an upsurge of positive emotions. In plain terms, rejected people will feel sad and upset, whereas accepted persons will feel happy.

Although the hypothesis that rejection should cause distress seems unassailable, a competing one has been put forward. It was proposed by researchers who had (somewhat surprisingly) failed to find the predicted patterns of emotional distress in their work (e.g., Twenge, Baumeister, Tice, & Stucke, 2001; Twenge, Catanese, & Baumeister, 2003). Attempting to explain the lack of observed emotion, they proposed that the immediate reaction to social rejection involved something akin to a shock reaction, in which the excluded person becomes emotionally numb. To support their case, they cited MacDonald and Leary (2005), who had reviewed evidence that socially rejected animals develop analgesia to physical pain. If one assumes that there is a link between the physical pain detection and

social emotion systems, it is plausible that rejected humans would temporarily become both physically and emotionally numb. Hence, the second prediction was that social exclusion would produce emotionally neutral states (which might nonetheless differ from the positive emotions following acceptance).

Furthermore, even if both acceptance and rejection caused emotional reactions, there was no reason to assume that the positive reaction to acceptance and the negative reaction to exclusion would be of the same magnitude. Two bases for predicting differences could be cited. Evidence generally suggests that negative events have a higher effect than positive ones (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Cacioppo, Gardner, & Bernston, 1997; Kahneman & Tyversky, 1979; Rozin & Royzman, 2001), and on that basis, one could predict that rejection would have stronger emotional effects than acceptance.

On the other hand, many negative and unpleasant events stimulate defensive reactions that minimize their effect (e.g., Taylor, 1991). People might react negatively but stifle their own incipient distress. Such inhibition of emotional response could reflect deliberate efforts at affect regulation (e.g., Larsen, 2000; Thayer, 1996) or indeed automatic, nonconscious defenses that repress aversive material (e.g., Freud, 1900/1913).

The present meta-analytic review used multiple approaches to examine the effects of social exclusion on emotion. Both distress and numbness hypotheses predicted a reduction in positive affect and a broad shift away from positive feelings and in the negative direction. This was tested by comparing rejected participants against neutral controls and acceptance conditions, with the prediction that rejected participants would show a relative shift from the positive toward the negative.

The numbness and distress hypotheses differed in terms of absolute state that should follow immediately upon social exclusion. The distress hypothesis predicts substantial amounts of genuine negative affect, as would be indicated by self-reports of emotion departing significantly from the neutral midpoint on the scale. In contrast, the numbness hypothesis predicts emotional states that would be neutral in absolute terms. It is arguable that one way to possibly tease apart the numbness and distress hypotheses is to examine absolute levels of emotion, and our second set of analyses was designed to accomplish this task. In plain terms, even if excluded people did feel worse than accepted ones, would they report feeling actually bad or merely neutral?

### *Self-Esteem*

Self-esteem has generally been considered a stable trait, and indeed, retest studies typically show quite high

consistency of trait self-esteem scores (e.g., Baumeister, 1991; Fleming & Watts, 1980; McCarthy & Hoge, 1982; Rosenberg, 1986; Silber & Tippet, 1965). Such stability may partly reflect the wording of trait scales, however. Subjective impressions of changes in self-esteem have prompted the development of state self-esteem scales (e.g., Heatherton & Polivy, 1991), which supposedly register temporary fluctuations in response to recent events and outcomes.

Several theoretical frameworks offer bases for predicting that state self-esteem, if not trait self-esteem, would change as a result of social exclusion and inclusion. Many theorists have proposed that perceived social approval and acceptance are integral, powerful bases for self-esteem (e.g., Cooley, 1902; Coopersmith, 1967; Mead, 1934). Taking this argument a step further, Leary, Tambor, Terdal, and Downs (1995) contended that self-esteem is directly linked to perceived inclusionary status. They said that the main function of self-esteem is to serve as a sociometer, that is, an inner gauge or measure of social acceptance. A drop in state self-esteem will therefore result from social exclusion or rejection, signaling to the individual that he or she has suffered an event that jeopardizes his or her capacity to satisfy the need to belong. Acceptance, conversely, should cause an increase in self-esteem, insofar as it signals that the need to belong is being satisfied.

Several variations on that simple prediction are possible. First, self-esteem may reflect a generalized sense of eligibility for relationships and perceived likelihood of having them in the future, rather than responding to specific, individual outcomes (Leary & Baumeister, 2000), and so its responsiveness to single laboratory manipulations may be muted: Any effect of exclusion on self-esteem could be indirect, possibly delayed, or dependent on rumination to reevaluate the self. Second, just as we noted the possibility of defensive reactions to ward off emotional distress, defenses may protect self-esteem from dropping as a result of rejection experiences (e.g., Kunda, 1990; Tesser, 2000), so studies may find no immediate effect of exclusion on self-esteem whereas acceptance could boost self-esteem.

Another theory of self-esteem has been proposed in the context of terror management theory (e.g., Pyszczynski, Greenberg, & Solomon, 1999). It treats self-esteem as a defense against the recognition of one's own mortality. Laboratory-based exclusions would seemingly have little or no actual relevance to mortality, so self-esteem might be unaffected. On the other hand, one could argue that even laboratory rejections would symbolize the possibility of death, insofar as exile has long been associated with death in human culture, and being ejected from a group would reduce safety and increase risks. The increased risk of death

symbolized by social rejection would stimulate an increased need for defense, and self-esteem would therefore increase as a defensive response. Thus, the prediction would be that exclusion would trigger a defensive increase in self-esteem.

### *Other Issues*

We assumed that not all rejections are the same. Hence, we coded and analyzed for a variety of factors that in principle could moderate the effect of social exclusion on emotion and self-esteem.

First, we considered the type of rejection manipulation. Williams and Zadro (2005) speculated that ostracism should reduce self-esteem more than other forms of social exclusion. We also compared real versus imagined rejection experiences, on the assumption that imaginary experiences would have less effect than real ones. Rejection from real relationships was predicted to have more effect than exclusion from ad hoc laboratory groups, strangers, or imagined groups. Relived past experiences were compared against current (typically staged) experiences.

The rejection context was also considered. Although Williams and his colleagues have shown that being rejected over a computer, the Internet, or a cell phone has deleterious consequences, as well as a similar effect on people as face-to-face rejection (e.g., Smith & Williams, 2004; Williams, Cheung, & Choi, 2000; Williams et al., 2002), being rejected face-to-face may be more intense than being rejected indirectly. We coded by the means of rejection (i.e., face-to-face vs. more indirect forms). We also considered the directness of the rejection: Did it come from the rejecting person directly, or was it communicated by a third party such as the experimenter?

The extent of the rejection was also coded. Global, explicit rejections (e.g., “we do not like you”) ought seemingly to produce a greater effect on self-esteem and emotion than implied rejections (e.g., “someone else was chosen instead of you”).

## METHOD

### Selection of Studies

#### *Criteria for Inclusion*

The meta-analyses were limited to studies that measured self- or other-reported (e.g., reports by a parent or teacher) affect and/or self-esteem subsequent to or in conjunction with rejection. Studies examining parental rejection were excluded, as peer and parental rejection are separate constructs and examining reactions to

parental rejection was outside the scope of this study. Manuscripts not printed in English were also excluded.

### *Literature Search*

To identify relevant studies, a computerized search using PsycINFO was performed, combining keywords ostracism, social rejection, social exclusion, social acceptance, peer rejection, romantic rejection, need to belong, belonging, relational devaluation, and need for affiliation with affect, mood, emotion, hurt feelings, distress, self-esteem, self-worth, self-feelings, self-evaluation, and self-concept. The search included all studies published in March 2007 and earlier and generated more than 2,000 records. In addition, Dissertation Abstracts International was searched, entering the keywords above to identify possible master's theses and dissertations not found in PsycINFO. Web of Science was searched as well for manuscripts referencing key theoretical papers or reviews within this area of research (e.g., Baumeister & Leary, 1995; Craighead, Kimball, & Rehak, 1979; Leary et al., 1995; Williams, 1997). Reference lists of all qualifying studies, as well as pertinent reviews, were manually examined to identify published studies not located through the computerized searches. Finally, to locate unpublished, submitted, or in press studies, we searched the Society for Personality and Social Psychology (SPSP) conference proceedings from the past several years and e-mailed researchers who had conducted research examining responses to social rejection. In addition, an e-mail announcement was posted on the SPSP listserv asking researchers to send manuscripts and/or study data that were relevant to the current research synthesis. The final sample included 192 studies reported in 134 journal articles or manuscripts (these are marked by an asterisk in the References section).

### Variable Coding

First, studies were divided into two categories based on the dependent variable (DV; *affect* or *self-esteem*). Second, separate meta-analyses were performed for experimental studies and for longitudinal, cross-sectional, and quasi-experimental studies examining reactions to rejection. As a result, four meta-analyses were conducted.

All studies that met inclusionary criteria were coded for participant, methodological, and DV characteristics. A trained coder coded a randomly selected 25% of the studies. To assess interrater reliability, the intraclass correlation ( $r_1 = 0.91-1.00$ ) was calculated for continuous variables, and kappa ( $\kappa = 0.76-1.00$ ) was calculated for categorical variables.

### Participant Characteristics

For each study, we coded the number of participants (total number of participants and number of participants in each condition), the mean age of participants, participant age category (participants were coded as children, adolescents, or adults; we included this variable as many of the studies included in the research synthesis did not report the mean age of participants), and the gender composition of participants (proportion female).

### Rejection Manipulation

It is theoretically plausible that stronger degrees of rejection or ostracism might elicit more negative consequences (lower affect and self-esteem) than lesser degrees of rejection, yielding larger effect sizes (see Leary, 1990, 2001, 2005; Williams & Zadro, 2005). Studies that have examined affect and self-esteem in response to rejection, however, have employed several different rejection manipulations. Because past studies have shown variations in affect and self-esteem in relation to social rejection, we examined whether these inconsistencies may be a result of variations in rejection manipulations, such as how explicit the rejection is, who or what the source of the rejection is, and who witnessed the rejection. As a result, we coded the type of rejection manipulation employed in each study, the context of the rejection manipulation (which included the means and the directness of rejection), the extent of the rejection manipulation, and the relationship with the rejecter. The study setting and control condition that the rejected group was compared to were also coded.

*Type of rejection manipulation.* For the type of rejection manipulation employed, we coded manipulations as *left out of a group* (e.g., an ostracism or exclusion manipulation, or a participant is told that no one wants to work with him or her; we also coded whether the participant was left out of a real group or an ostensible group), *threat of rejection* (a direct threat of rejection from a specific person or group, such as from a romantic partner; e.g., a participant is told that should his or her partner find out about a negative past behavior or personal characteristic, a conflict could develop), *possible or anticipated rejection* (a general threat of future rejection, such as telling someone that he or she is the type of person who will end up alone in the future), *imagined (fictional) rejection experience* (e.g., a participant is asked to imagine a scenario in which he or she is rejected or ostracized by another person or persons), *relived past rejection experience* (e.g., a participant is asked to think about or to write about a time he or she was ostracized or rejected in the past; we also coded whether the participant was to *think* or *write* about this

past rejection experience), or *primed or cued rejection* (e.g., priming a participant with rejection or acceptance words during a word identification task on the computer, having a participant unscramble four-word phrases connoting rejection or acceptance, presenting a participant with tones paired with frowning or smiling faces during a separate task).

*Context of the rejection manipulation.* In addition to the type of rejection manipulation employed, it is important to consider the circumstances within which social rejection took place. The context of the manipulation was divided into *means of rejection* and *directness of rejection*. For means of rejection, the way in which rejection took place, studies were coded as *face-to-face rejection* (i.e., the participant received rejecting feedback by the rejecter or the experimenter), *vocalized rejection from a non-present person* (e.g., rejecting feedback is received through an intercom message or a telephone communication), *rejection through another medium* (e.g., rejection in a chat room, through a text message on a cell phone, or from a message on the computer or a piece of paper), or *unspecified/mixed rejection* (e.g., in relived, imagined, or primed rejection experiences). For directness of rejection, studies were coded as *from the rejecter himself or herself, from the experimenter* (i.e., the experimenter informs the participant that he or she has been rejected by others), *from another or unidentified entity* (e.g., through a message on the computer or a piece of paper), and *unspecified/mixed* (e.g., in relived, imagined, or primed rejection experiences).

*Extent of rejection.* We also coded for the extent of the rejection manipulation that took place. Studies were coded as employing *explicit rejection* (e.g., a global statement of rejection, “we don’t like you”), *implied rejection* (e.g., participants are told “someone was chosen over you,” “nobody chose you,” “you can’t join”), *exclusion/ignoring/ostracism* (subcoded as *complete ostracism* when no contact or attention was paid to the participant or *eventual ostracism* when the participant was slowly excluded or ignored over time), or *unspecified/mixed rejection* (e.g., in relived, imagined, or primed rejection experiences).

*Relationship with rejecter.* It may be important to consider the relationship that one has with his or her rejecter, as previous research has shown that being close to one’s rejecter intensifies negative outcomes associated with rejection (Tesser, Millar, & Moore, 1988). Furthermore, Murray, Holmes, and Collins (2006) suggested that as interdependence and closeness with another increase, the greater the psychological costs of

rejection by close others (also see Braiker & Kelley, 1979; Leary & Baumeister, 2000). Individuals rejected by close others may therefore report a greater reduction in affect or self-esteem than those rejected by acquaintances or strangers. The relationship that the participant had with the rejecter (or person[s] who ostensibly rejected the participant) was coded as a *stranger* (e.g., experimental confederates, other participants), an *acquaintance*, a *close friend*, a *romantic partner*, or *unknown/mixed* (e.g., in relived, imagined, or primed rejection experiences).

*Study setting.* Twenge and colleagues (2003) theorized that whether one interacts with his or her rejecter may determine affective responses to rejection. They postulated that when one interacts with the rejecter prior to being rejected, the individual has a defensive reaction to rejection, causing the individual's affective response system to numb. When the individual does not interact with his or her rejecter prior to rejection, the person does not have this defensive response to rejection and as a result may not experience emotional numbness. We therefore coded the interaction that participants had with others, or the setting into which participants were placed, as *individual with no communication with others* (i.e., the participant only interacts with the experimenter), *individual but ostensibly with others* (i.e., the participant believes that he or she is interacting with another person, such as through a computer ostracism manipulation), *mixed individual and group* (e.g., the participant interacts with a group and then is separated from the others for the remainder of the study), or *group* (e.g., the participant is ostracized or excluded by other individuals or rejected or chosen last by a group or in front of a group of other people).

*Control group.* We expected larger effect sizes for affect and self-esteem when rejection was compared to a very positive experience (i.e., acceptance), and smaller effect sizes when rejection was compared to a neutral or to another negative experience. Within the studies included in this research synthesis, rejection experiences were often compared to control experiences of acceptance, neutrality, failure, or other negative outcomes. The type of control group that the rejected group was compared to was coded as *acceptance/belonging* (e.g., the participant is included in or accepted by a group, or the participant is told that he or she will have rewarding relationships throughout his or her life), *neutral control* (e.g., no feedback), *negative non-social experience* (e.g., a person is asked to relive an illness or is told that he or she is accident prone), *negative ego threatening experience* (e.g., the participant is asked to relive a past failure experience), or *the perpetrator of ostracism/rejection* (i.e., a

participant is directed or assigned to reject or ostracize another individual). It should be noted that many studies included more than one control group. For these studies, separate effect sizes were calculated comparing rejected individuals to participants from each control group. Although effect sizes would typically be aggregated or averaged across different group comparisons for each study, this was not appropriate as we expected different effect sizes to result from the different comparisons. It was therefore important to include the type of control condition as a potential moderating variable of the average weighted effect size.

#### *Real-World Rejection Experiences*

For studies that examined reactions to rejection in a real-world setting (i.e., longitudinal, cross-sectional, and quasi-experimental studies), the predictor variable, relationship with the rejecter, and control group (if applicable) were coded.

*Predictor variable.* The variable used to predict reactions to rejection was coded as previous studies (e.g., Kistner, Balthazor, Risi, & Burton, 1999; Panak & Garber, 1992) have found that perceived rejection or acceptance is a stronger predictor of dysphoria and depression than actual rejection. This is also consistent with Leary's (2001) proposal that perceived relational evaluation is an important factor to consider when examining individual responses to rejection. The predictor variable was coded as *sociometric status* (i.e., peer nominations of liked and disliked peers), *perceived social rejection/acceptance* (e.g., how accepted the participant feels by others), or an actual *past rejection experience* (e.g., diary studies).

*IV rater.* We also coded whether the predictor variable was reported or rated by the *participant*, *peers*, a *parent*, a *teacher*, *another observer*, or a *combination of ratings from multiple sources*. When the predictor variable was rated by multiple sources (e.g., ratings from peers, a parent, and a teacher), the composite effect size was calculated from these multiple measurements using Rosenthal and Rubin's simplified composite effect size calculation (Rosenthal & Rubin, 1986).

*Relationship with rejecter.* The relationship that the participant had with the rejecter(s) was coded for these studies as *peers*, *romantic partner*, *work/group*, or *unknown/mixed*.

*Control group (if applicable).* Finally, when the study design was quasi-experimental, the control group was coded as *non-rejected* if the predictor variable was perceived rejection/acceptance or *popular* or *average* if the

predictor variable was sociometric status. Neglected and controversial groups were not included as comparison control groups in this analysis for studies in which the predictor variable was sociometric status, as that was beyond the scope of our synthesis. See, however, Newcomb, Bukowski, and Pattee (1993) for a meta-analysis examining behavioral differences among rejected, popular, average, neglected, and controversial children.

#### *Other Methodological Characteristics*

*Source of publication.* All studies were coded for source of publication as the publication source could produce a significant bias in effect sizes (i.e., more significant effects may be more likely to be published; see, for instance, Easterbrook, Berlin, Gopalan, & Matthews, 1991, and Lipsey & Wilson, 1993). Source of publication included *articles published in scientific journals* (this included studies currently in press), *book chapters*, *dissertations or master's theses*, and *unpublished studies*.

*Year of publication.* The year in which a study was either published or conducted (for unpublished studies) was coded.

*Research group conducting the study.* As several of the studies (especially experimental studies manipulating social rejection) included in the research syntheses were conducted by the same groups of researchers, studies were coded based on the research group that conducted the study, as follows: *Baumeister, Twenge, and colleagues*; *Leary and colleagues*; *K. Williams and colleagues*; *Gardner and colleagues*; and *Independent*.

*Inclusion of other IV.* Many of the studies included in these analyses examined how dispositional and situational factors influenced reactions to social rejection. Williams and Zadro (2005) suggested that social rejection and ostracism may have a differential effect on individuals depending on the situational and dispositional factors present. Furthermore, several studies have found that dispositional and situational factors significantly influence the effect that rejection has on one's affect and self-esteem. As a result, we coded whether another independent variable was included in the study, and what the IV was. In addition, we coded whether that factor was examined as a moderating variable and, if so, the effect size of the interaction between rejection and the moderating factor on affect or self-esteem.

*Study design.* Each study was coded as experimental, quasi-experimental, cross-sectional, or longitudinal.

*Method of assignment to conditions (if applicable).* The method used to assign participants to conditions in

experimental and quasi-experimental studies was coded as *random assignment*, *within-subjects design*, *assignment predetermined by some variable* (quasi-experimental studies; e.g., the group that the participant belonged to was determined by sociometric status of the participant), or *self-selected* (participants selected the group).

#### *Affect*

One possible explanation for the inconsistencies found in affect following rejection is that broad affective measurements may be insensitive to brief acceptance or rejection experiences manipulated within the laboratory (Gardner, Pickett, & Brewer, 2000; Murray, Rose, Bellavia, Holmes, & Kusche, 2002; Nezlek, Kowalski, Leary, Blevins, & Holgate, 1997). In addition, it is possible that less established and one-item measures of affect might demonstrate less validity and reliability than more established measures, introducing additional measurement error into the equation. That is, more well-established measurements of affect could potentially yield larger effect sizes than less established and one-item measures. As a consequence, how affect is assessed may have a substantial effect on results. For studies measuring affect as the DV, how the DV was measured, the type of affect measured, and the DV rater were coded.

*How the DV was measured.* One possibility for inconsistencies apparent within the literature examining affective reactions to rejection is that the way affect is assessed (e.g., the questionnaire used or type of measurement employed) may influence the effect size for affect following rejection. As a consequence, we coded how affect was measured. Studies were coded as measuring the DV with a *questionnaire* (with the name of the questionnaire noted, and whether the questionnaire was one-item or multi-item), an *implicit affective measure*, or *other operationalizations* (e.g., facial electromyogram [EMG]; coding of facial, verbal, or behavioral affect).

*Type of affect measured.* In addition, it has been suggested that the type of affect assessed could have a significant effect on rejected individuals' report of affect. We coded the type of affect measured as a *bipolar conceptualization* (i.e., affect is assessed along a one-dimensional continuum), *negative affect only* (e.g., NA scale from the Positive and Negative Affect Scale [PANAS]), *positive affect only* (e.g., PA scale from the PANAS), *emotional distress*, *hurt feelings*, or *sadness/depressed mood/depression* (e.g., Beck Depression Inventory [BDI] or Children's Depression Inventory [CDI] scores, dysphoria, sadness). When negative affect and positive affect were reported separately within the same study, effect sizes were calculated for positive and negative

affect, and the composite effect size (Rosenthal & Rubin, 1986) was then calculated from those estimates.<sup>1</sup>

*DV rater.* Finally, the person rating the DV was coded as the *participant* (self-report), *parent*, *teacher*, *other observer*, or a *combination of ratings from multiple sources*. When the DV was rated by multiple sources (e.g., ratings from participant, parent, and teacher), the composite effect size was calculated from these multiple measurements using Rosenthal and Rubin's simplified composite effect size calculation (Rosenthal & Rubin, 1986).

### Self-Esteem

For studies measuring self-esteem as the DV, the type of self-esteem measured and the DV rater were coded.

*Type of self-esteem measured.* We coded the type of self-esteem measured as *state self-esteem/self-worth*, *trait self-esteem/self-worth*, *implicit self-esteem*, *self-feelings/self-evaluation*, or *self-concept* (if only academic self-concept was assessed within a study, that study was not included). The measure used to assess self-esteem was also coded.

*DV rater.* The person rating the DV was rated as the *participant* (self-report), *parent*, *teacher*, *other observer*, or a *combination of ratings from multiple sources*. When the DV was rated by multiple sources (e.g., ratings from participant, parent, and teacher), the composite effect size was calculated from these multiple measurements using Rosenthal and Rubin's simplified composite effect size calculation (Rosenthal & Rubin, 1986).

### Calculating Effect Sizes

Based on recommendations by Rosenthal (1991),  $r$  was calculated as the effect size for all studies included in the meta-analyses. Rosenthal (1991) outlines several reasons for the preference of  $r$  over  $d$ , many of which are directly applicable to these meta-analyses. First, within experimental and quasi-experimental studies, for which Cohen's  $d$  (Cohen, 1988) is most commonly calculated as the effect size,  $d$  is only accurate when authors report sample sizes for each group. Most often, and as was the case for many of the studies included in these meta-analyses, only the overall sample size is reported, not the sample size for each group. If equal sample sizes are assumed for each group,  $d$  can be calculated, but as sample sizes for each group become more and more unequal,  $d$  is increasingly underestimated (Rosenthal, 1991). Second, although there is only a handful of studies included in these analyses employing a repeated-measures

design (e.g., affect or self-esteem before and after some rejection manipulation), employing  $r$  as our effect size allows us not to make special adjustments for  $t$  from independent-samples and dependent-samples designs (Rosenthal, 1991). Third, calculating  $r$  for all studies allows a comparison of the average effect size estimates for experimental studies to the average effect size estimates for longitudinal, cross-sectional, and quasi-experimental studies. Although there are obvious interpretation issues when comparing the two classes of studies, as causal conclusions can only be made for results from experimental studies and not for results from the three other study designs, it nonetheless allows for a basic comparison.

For longitudinal and cross-sectional studies examining the relationship between rejection and the DV (affect or self-esteem), Pearson's  $r$  was entered as the effect size for each study. For experimental and quasi-experimental studies examining responses to rejection, reporting affect or self-esteem from those in rejected and control groups,  $r$  was calculated from  $t$ ,  $F$ , or, when those statistics were not reported, the  $p$  value. When only means and standard deviations were reported, rather than inferential statistics, Cohen's  $d$  (Cohen, 1988) was first calculated and converted to  $r$  (Rosenthal, 1991). Although this could result in the underestimation of  $d$  before converting  $d$  to  $r$ , it should be noted that many of the studies included in the meta-analyses that only provided means and standard deviations also reported sample sizes for each group. This was not the case for every study in which  $d$  was calculated and converted to  $r$ . It is, however, preferable to calculate  $r$  for the majority of studies included in these meta-analyses, rather than to calculate  $d$  for all studies, as this may ultimately reduce the underestimate of effect sizes.

After  $r$  was calculated for each study,  $r$  was transformed to Fisher's  $z_r$  (see Fisher, 1928). This transformation was conducted because as the population parameter estimated by  $r$  gets larger (or farther away from zero), the distribution of  $r$  from repeated sampling from the population becomes more skewed, which complicates the comparison and combination of  $r$ s (Rosenthal, 1991). Fisher's  $z_r$  transformation ( $1/2 \log_e[(1 + r)/(1 - r)]$ ) is approximately normally distributed, regardless of the magnitude of the population parameter estimated by  $r$ . Rosenthal (1991) commented that although  $z_r$  is not as easily interpreted as  $r$ , it is a very useful effect size estimate. Furthermore, tests of significant differences between  $r$ s are more accurate when Fisher's  $z_r$  transformation is employed (Rosenthal, 1991), which may be of importance to the current meta-analyses as we are examining whether any of the coded variables are significant moderators of the average weighted effect sizes.



Effect sizes were calculated such that a positive effect size is indicative of rejected individuals demonstrating more negative affect or lower self-esteem than control individuals, whereas a negative effect size is indicative of control individuals demonstrating more negative affect or lower self-esteem than rejected individuals. It should again be noted that when multiple control groups were included in a study, the effect sizes comparing DV values between the rejected group and each control group were calculated. Refer to Tables 1 through 4 for the effect size and primary coded variables for each study included in the meta-analyses.

### Data Analyses

Within this research synthesis, we included multiple effect sizes from several studies to compare rejected individuals to those in all other comparison groups (e.g., accepted, negative control, neutral control), which is problematic as this violates the statistical assumption of independence. One possible solution to this problem suggested by Kalaian and Raudenbush (1996) is to employ a multivariate mixed-effects model when calculating average weighted effect sizes. The advantage of employing this model is that it accounts for dependencies in the data (i.e., it takes into account the correlations among multiple DVs or effect sizes in a study) and allows different numbers of effect sizes to be included from each study (Kalaian & Raudenbush, 1996). Unfortunately, correlations among multiple effect sizes within the studies included in this research synthesis were not typically available. As a result, we chose to treat these nonindependent results as independent in our meta-analyses.<sup>2</sup> Although this method tends to create errors in significance testing, Rosenthal (1991) stated that “treating nonindependent results as independent for purposes of effect size estimation simply weights each study in proportion to the number of different effect sizes it generates” (p. 27). Therefore, although we do report significance tests in our results, the reader should allocate more attention to the average effect sizes than to the significance tests.

When calculating the average effect sizes, we chose to employ a random effects model for each meta-analysis. The random effects model was selected over the fixed effects model for two reasons: (a) We wanted to make inferences about a population of studies examining affect or self-esteem in response to social rejection, and (b) the tests for the homogeneity of effect size estimates ( $Q$ ; all  $p$ s < .01) were statistically significant for each analysis, suggesting that a conditionally random-effects model be chosen (Hedges & Vevea, 1998). Effect sizes were weighted by the sample size of the study (more specific,  $z_r$  is weighted by  $N - 3$ ) as effect size estimates tend to be more accurate from larger samples than from

smaller samples. Although the average weighted effect sizes are reported, we calculated and report the average unweighted effect sizes as well. Weighted least squares multiple regression analyses were then conducted to test for significant effects of coded moderator variables on average weighted effect sizes.

In addition to calculating the average weighted effect sizes for self-esteem and affect, we also examined the strength of the negative affect experienced by rejected and accepted participants following a rejection manipulation. To do this, we first identified the studies that reported mean affect scores for rejected and accepted participants and also reported the scale used to assess affect and/or the scale range for affect scores. Affect scores were then calculated proportional to the scale midpoint and converted to a 21-point scale ranging from  $-10$  to  $+10$ . For bipolar affect,  $-10$  indicates very negative affect,  $+10$  indicates very positive affect, and  $0$  indicates neutral affect. For positive affect (PA) and negative affect (NA),  $-10$  indicates an absence of PA or NA,  $+10$  indicates very positive or very negative affect, and  $0$  indicates moderate PA or NA, respectively. Means and standard deviations were then calculated for the converted affect scores for NA, PA, and bipolar affect separately. We then combined the NA and PA scores (for those studies that assessed both PA and NA) by subtracting converted NA scores from converted PA scores and dividing by 2. Next, the PA  $-$  NA scores were combined with the converted bipolar scores, and the mean from these scores was calculated to estimate how negative, on average, rejected and accepted participants reported feeling following rejection or acceptance.

## RESULTS

### *Emotion and Affect*

*Experimentally manipulated social rejection* ( $k = 165$ ). Across studies, we found significant albeit modest effects of rejection on emotion and affect. The average weighted effect size ( $z_r$ ; random-effects model) for studies examining affect in response to experimentally manipulated social rejection was 0.27 (0.32 for a fixed-effects model), which is significantly different from zero,  $Z = 11.21$ ,  $p < .01$ , 95% CI = 0.22, 0.32.<sup>3</sup> This indicates that across all measures of affect, rejected participants reported a more negative affective state than participants in all other conditions combined. The average unweighted effect size ( $z_r$ ) was 0.26 ( $SD = 0.29$ ,  $SE = .02$ ),  $t(164) = 11.29$ ,  $p < .01$ . The median unweighted effect size was 0.20, min =  $-0.52$ ,  $Q_1 = 0.04$ ,  $Q_3 = 0.41$ , max = 0.86 (see Figure 1 for a box plot of the unweighted effect sizes).

**Table 1:** Effect Sizes ( $z$ ) and Primary Coded Variables for Experimentally Manipulated Social Rejection Studies Measuring Affect as the Dependent Variable

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	$N$	$z_r$
Allen et al. 1996	journal	imagined	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	bipolar	100	0.86
Allen et al. 1996	journal	imagined	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	negative ego threat	bipolar	100	-0.05
Baldwin & Main 2001	journal	primed/cued	another medium	other	implied	mixed individual/group	accept	bipolar	35	0.56
Baldwin & Main 2001	journal	primed/cued	another medium	other	implied	mixed individual/group	neutral	bipolar	36	0.40
Baldwin et al. 2003 S1	journal	primed/cued	another medium	other	implied	mixed individual/group	accept	composite	39	0.00
Baldwin et al. 2003 S1	journal	primed/cued	another medium	other	implied	mixed individual/group	neutral	composite	39	0.00
Baldwin et al. 2003 S2	journal	primed/cued	another medium	other	implied	mixed individual/group	accept	composite	87	0.00
Baumeister et al. 2002 S1	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	37	0.56
Baumeister et al. 2002 S1	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	36	0.13
Baumeister et al. 2002 S2	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	44	0.26
Baumeister et al. 2002 S2	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	43	0.02
Baumeister et al. 2002 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	negative	54	0.32
Baumeister et al. 2002 S3	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	negative	55	0.14
Baumeister et al. 2005 S1	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	24	0.34
Baumeister et al. 2005 S1	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	24	0.35
Baumeister et al. 2005 S2	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	bipolar	35	0.40
Baumeister et al. 2005 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	20	0.00
Baumeister et al. 2005 S3	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	20	0.00

(continued)

**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	Z <sub>r</sub>
Baumeister et al. 2005 S3	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	20	0.00
Baumeister et al. 2005 S4	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	20	0.54
Baumeister et al. 2005 S4	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	20	0.30
Baumeister et al. 2005 S5	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	34	0.46
Baumeister et al. 2005 S5	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	34	0.32
Baumeister et al. 2005 S6	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	30	0.14
Baumeister et al. 2005 S6	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	30	0.14
Blackhart 2005	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	56	0.78
Blackhart 2006a	unpublished	future rejection	face-to-face	experimenter	implied	individual	accept	composite	79	0.65
Blackhart 2006a	unpublished	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	composite	104	0.55
Blackhart et al. 2007	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	164	0.58
Blackhart et al. 2007	journal	left out	face-to-face	experimenter	implied	mixed individual/group	neutral	composite	210	0.33
Bourgeois & Leary 2001	journal	left out	face-to-face	rejecter	implied	group	accept	composite	96	0.69
Buckley et al. 2004 S1	journal	left out	another medium	other	explicit	individual	accept	negative	74	0.51
Buckley et al. 2004 S1	journal	left out	another medium	other	explicit	individual	neutral	negative	74	0.38
Buckley et al. 2004 S2	journal	left out	another medium	other	explicit	ind ostensibly w/ others	accept	negative	41	0.17
Buckley et al. 2004 S2	journal	left out	another medium	other	ostracism	ind ostensibly w/ others	accept	negative	42	0.60
Catanese 2004 S1	dissertation/thesis	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	accept	bipolar	24	0.18
Catanese 2004 S1	dissertation/thesis	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	bipolar	23	0.18
Catanese 2004 S2	dissertation/thesis	future rejection	face-to-face	experimenter	implied	individual	accept	composite	50	0.12

(continued)

**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	$z_r$
Catanese 2004 S2	dissertation/thesis	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	composite	50	0.21
Catanese 2004 S3	dissertation/thesis	future rejection	face-to-face	experimenter	implied	individual	accept	composite	65	0.16
Catanese 2004 S3	dissertation/thesis	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	composite	65	0.16
Cheuk & Rosen 1993	journal	left out	nonpresent person	rejecter	implied	group	neutral	composite	167	0.66
Craighead et al. 1979 S1	journal	imagined	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	negative	32	0.14
Craighead et al. 1979 S2	journal	imagined	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	negative	24	0.69
Craighead et al. 1979 S3	journal	imagined	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	negative	36	0.51
Debono 2005	dissertation/thesis	left out	face-to-face	rejecter	ostracism	mixed individual/group	neutral	negative	53	0.14
DeWall & Baumeister 2006 S1	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	22	0.16
DeWall & Baumeister 2006 S1	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	22	-0.30
DeWall & Baumeister 2006 S2	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	20	0.20
DeWall & Baumeister 2006 S2	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	20	-0.10
DeWall & Baumeister 2006 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	20	0.39
DeWall & Baumeister 2006 S3	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	20	0.20
DeWall & Baumeister 2006 S4	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	21	-0.12
DeWall & Baumeister 2006 S4	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	21	-0.39

(continued)

**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	Z <sub>r</sub>
DeWall & Baumeister 2006 S5	journal	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	accept	composite	83	0.13
DeWall & Baumeister 2006 S5	journal	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	composite	83	-0.11
DeWall et al. 2005	unpublished	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	24	0.05
DeWall et al. 2005	unpublished	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial neutral	bipolar	27	0.03
Downey & Feldman 1996 S2	journal	left out	face-to-face	experimenter	implied	mixed individual/group	neutral	negative	47	0.00
Downey et al. 1998 S2	journal	left out	face-to-face	experimenter	implied	individual	neutral	distress	76	0.03
Downs 1997	dissertation/thesis	left out	face-to-face	rejecter	ostracism	mixed individual/group	accept	bipolar	76	0.28
Eisenberger et al. 2006	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	distress	50	0.69
Eisenberger et al. 2006	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	neutral	distress	50	0.01
Ford & Collins 2006	dissertation/thesis	left out	face-to-face	experimenter	implied	ind ostensibly w/ others	neutral	negative	78	0.08
Gaertner & Iuzinni 2005	book chapter	left out	face-to-face	rejecter	explicit	mixed individual/group	neutral	negative	228	0.44
Gardner & Knowles 2003	unpublished	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	bipolar	41	0.28
Gardner et al. 2000 S1	journal	left out	another medium	rejecter	ostracism	individual	accept	bipolar	61	0.12
Gardner et al. 2000 S2	journal	left out	another medium	rejecter	ostracism	individual	accept	bipolar	29	0.18
Gardner et al. in press	journal	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	bipolar	111	0.50
Gross 2006	dissertation/thesis	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	negative	110	0.38
Hitlan, Kelly, & Zárata 2006	unpublished	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	composite	74	0.20
Kelly 1999 S2	dissertation/thesis	left out	face-to-face	rejecter	ostracism	group	accept	composite	79	0.23
Knowles & Gardner 2004	unpublished	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	bipolar	129	0.03

(continued)

**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	$z_r$
Knowles & Gardner 2004	unpublished	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	negative ego threat	bipolar	130	0.00
Knowles & Gardner 2005	unpublished	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	accept	bipolar	64	0.05
Knowles 2006	unpublished	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	negative ego threat	bipolar	48	-0.03
Knowles 2006	unpublished	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	bipolar	57	0.02
Knowles et al. 2003	unpublished	left out	another medium	mixed rejecter	ostracism	ind ostensibly w/ others	accept	bipolar	49	0.23
Knowles et al. 2005	unpublished	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	24	0.24
Knowles et al. 2005	unpublished	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	27	0.04
Knowles et al. 2006	unpublished	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	bipolar	85	0.07
Koch & Sheppard 2004	unpublished	rejection threat	another medium	rejecter	implied	individual	accept	positive	96	0.44
Koch 2005	unpublished	rejection threat	another medium	rejecter	implied	mixed individual/group	accept	composite	42	0.02
Lakin 2003 S2	dissertation/thesis	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	composite	169	0.16
Lakin et al. 2008	dissertation/thesis	left out	another medium	other	ostracism	ind ostensibly w/ others	accept	composite	36	0.29
Langens & Stucke 2005 S1	journal	rejection threat	face-to-face	experimenter	explicit	group	neutral	negative	60	-0.11
Leary et al. 1998	journal	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual		hurt feelings	84	0.74
Maner et al. 2007 S1	journal	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	accept	composite	37	0.23
Maner et al. 2007 S1	journal	relived	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	neutral	composite	37	0.23
Maner et al. 2007 S2	journal	future rejection	face-to-face	experimenter	implied	individual	accept	composite	23	0.54
Maner et al. 2007 S2	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	composite	23	0.55
Maner et al. 2007 S3	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	18	0.23
Maner et al. 2007 S4	journal	left out	face-to-face	experimenter	explicit	ind ostensibly w/ others	neutral	bipolar	34	0.00

(continued)

**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	$z_r$
Maner et al. 2007 S5	journal	left out	face-to-face	experimenter	explicit	ind ostensibly w/ others	neutral	bipolar	49	0.08
Maner et al. 2007 S6	journal	left out	face-to-face	experimenter	explicit	ind ostensibly w/ others	neutral	bipolar	53	0.00
Murray et al. 2002 S1	journal	rejection threat	face-to-face	experimenter	implied	individual	neutral	bipolar	66	0.00
Murray et al. 2002 S3	journal	rejection threat	face-to-face	experimenter	implied	individual	neutral	bipolar	65	0.00
Nadler et al. 1980	journal	left out	face-to-face	rejecter	explicit	group	neutral	bipolar	65	0.27
Nesdale & Lambert 2007	journal	left out	face-to-face	experimenter	explicit	ind ostensibly w/ others	accept	bipolar	88	0.78
Nezlek et al. 1997 S1	journal	left out	another medium	other	implied	individual	accept	bipolar	116	0.00
Nezlek et al. 1997 S2	journal	left out	another medium	other	implied	individual	accept	bipolar	151	0.00
Park & Crocker 2006	unpublished	left out	another medium	rejecter	explicit	mixed individual/group	neutral	composite	90	0.41
Poulsen 2003	dissertation/thesis	left out	face-to-face	rejecter	ostracism	group	neutral	composite	91	0.83
Poulsen 2003	dissertation/thesis	left out	face-to-face	rejecter	ostracism	group	perp	composite	124	0.80
Reijntjes et al. 2006	journal	left out	another medium	other	implied	ind ostensibly w/ others	accept	composite	186	0.58
Robinson et al. 2006 S1	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	122	0.40
Robinson et al. 2006 S2	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	156	0.45
Rosen et al. 1987	journal	left out	another medium	rejecter	explicit	group	accept	negative	70	0.20
Rosen et al. 1987	journal	left out	another medium	rejecter	explicit	group	neutral	negative	70	0.20
Rosen et al. 1996 S2	journal	left out	another medium	rejecter	explicit	individual	accept	negative	69	0.34
Sandstrom & Cramer 2003	journal	left out	face-to-face	rejecter	explicit	individual	neutral	distress	50	0.34
Slatcher et al. 2006	unpublished	left out	face-to-face	rejecter	explicit	group	accept	composite	82	0.44
Smith & Williams 2004	journal	left out	another medium	rejecter	ostracism	group	accept	negative	40	0.69

(continued)

**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	$Z_r$
Snapp & Leary 2001	journal	left out	another medium	rejecter	ostracism	mixed individual/group	accept	composite	64	0.59
Sommer et al. 2001 S1	journal	relived	unspecified/mixed	unspecified/mixed	ostracism	individual	perp	negative	131	0.45
Sommer et al. 2001 S2	journal	relived	unspecified/mixed	unspecified/mixed	ostracism	individual	perp	negative	104	0.37
Stroud et al. 2002	journal	left out	face-to-face	rejecter	ostracism	group individual	neutral	negative	25	0.00
Tragesser 2005	dissertation/thesis	future rejection	face-to-face	experimenter	implied	individual	accept	depress	72	0.19
Tragesser 2005	dissertation/thesis	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	depress	73	0.26
Twenge et al. 2001 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	26	0.73
Twenge et al. 2001 S3	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	25	0.35
Twenge et al. 2001 S4	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	30	0.19
Twenge et al. 2001 S5	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	34	0.28
Twenge et al. 2002 S1	journal	future rejection	face-to-face	experimenter	implied	group individual	accept	bipolar	33	0.30
Twenge et al. 2002 S1	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	33	0.06
Twenge et al. 2002 S2	journal	future rejection	face-to-face	experimenter	implied	individual	accept	composite	24	-0.02
Twenge et al. 2002 S2	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	composite	24	-0.06
Twenge et al. 2002 S4	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	26	0.07
Twenge et al. 2002 S4	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	26	0.07
Twenge et al. 2003 S1	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	composite	54	-0.11
Twenge et al. 2003 S1	journal	left out	face-to-face	experimenter	implied	group mixed individual/group	accept	bipolar	54	0.34

(continued)



**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	$z_r$
Twenge et al. 2003 S2	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	bipolar	96	0.07
Twenge et al. 2003 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	composite	27	0.08
Twenge et al. 2003 S3	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial neutral	composite	27	0.01
Twenge et al. 2003 S5	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	30	0.41
Twenge et al. 2003 S6	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	20	0.07
Twenge et al. 2003 S6	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial neutral	bipolar	20	0.07
Twenge et al. 2003 S6	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	20	0.07
Twenge, Cacho, & Lyche 2006 S1	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	bipolar	107	0.50
Twenge, Cacho, & Lyche 2006 S2	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	bipolar	44	0.41
Twenge, Kooole, et al. 2006 S1	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	bipolar	58	0.17
Twenge, Kooole, et al. 2006 S2	unpublished	future rejection	face-to-face	experimenter	implied	group individual	accept	bipolar	26	0.39
Twenge, Kooole, et al. 2006 S2	unpublished	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	27	0.19
Twenge, Kooole, et al. 2006 S3	unpublished	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial accept	bipolar	36	0.03
Twenge, Kooole, et al. 2006 S6	unpublished	imagined	unspecified/mixed	unspecified/mixed	implied	individual	accept	composite	63	0.86
Twenge, Kooole, et al. 2006 S6	unpublished	future rejection	face-to-face	experimenter	implied	individual	accept	composite	64	0.31
Twenge et al. 2007 S1	journal	future rejection	face-to-face	experimenter	implied	individual	accept	composite	18	0.19
Twenge et al. 2007 S1	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial neutral	composite	17	-0.52
Twenge et al. 2007 S1	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	composite	17	-0.04

(continued)

**Table 1.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Affect Measured	N	Z <sub>r</sub>
Twenge et al. 2007 S2	journal	left out	face-to-face	experimenter	implied	mixed individual/group	accept	bipolar	20	0.37
Twenge et al. 2007 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	bipolar	24	-0.03
Twenge et al. 2007 S3	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	bipolar	24	-0.10
Twenge et al. 2007 S3	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	bipolar	25	-0.28
Twenge et al. 2007 S5	journal	future rejection	face-to-face	experimenter	implied	individual	accept	composite	20	0.59
Twenge et al. 2007 S5	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	composite	21	0.05
Warburton et al. 2006	journal	left out	face-to-face	rejecter	ostracism	group	accept	bipolar	40	0.23
Williams et al. 2000 S1	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	bipolar	742	0.40
Williams et al. 2002 S1	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	bipolar	390	0.12
Williams et al. 2002 S3	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	bipolar	36	0.42
Williams et al. 2002 S4	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	bipolar	30	0.46
Williams et al. 2002 S4	journal	left out	face-to-face	rejecter	ostracism	group	accept	bipolar	30	0.46
Zadro et al. 2004 S1	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	bipolar	52	0.02
Zadro et al. 2004 S2	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	bipolar	77	0.30
Zadro et al. 2005 S1	journal	left out	face-to-face	rejecter	ostracism	group	perp	distress	18	0.56
Zadro et al. 2005 S2	journal	left out	face-to-face	rejecter	ostracism	group	perp	distress	30	0.46

**Table 2.** Effect Sizes ( $z_r$ ) and Primary Coded Variables for Real-World Social Rejection Studies Measuring Affect as the Dependent Variable

Study	Publication Source	Predictor	IV Rater	Type Affect Measured	Dependent Variable Rater	Participant Age	N	$z_r$
Anderman 2002 S2	journal	perceived reject/accept	self	depression	self	adolescent	745	0.48
Ayduk et al. 2001	journal	past rejection	self	depression	self	adult	223	0.08
Bell-Dolan et al. 1995	journal	sociometric status	peers	depression	self	child	74	0.24
Bell-Dolan et al. 1995	journal	sociometric status	peers	depression	self	child	74	0.28
Boivin et al. 1994	journal	sociometric status	peers	composite	self	child	106	0.37
Boivin et al. 1995	journal	sociometric status	peers	depression	self	child	567	0.21
Carton 1996	dissertation/thesis	sociometric status	peers	depression	combination	child	140	0.44
Dill et al. 2004	journal	perceived reject/accept	teacher	negative	self	child	464	0.24
Dumas et al. 1996	journal	sociometric status	peers	depression	peers	child	478	0.40
Estévez López et al. 2006	journal	sociometric status	peers	composite	self	adolescent	843	0.10
Flook et al. 2005	journal	sociometric status	teacher	depression	teacher	child	201	0.51
French & Waas 1985	journal	sociometric status	peers	depression	parent	child	207	0.16
French & Waas 1985	journal	sociometric status	peers	depression	parent	child	716	0.24
Hagerty & Williams 1999	journal	perceived reject/accept	self	depression	self	adult	410	0.33
Hitlan, Clifton, & DeSoto 2006	journal	perceived reject/accept	self	depression	self	adult	223	0.21
Hock & Lutz 2001	journal	past rejection	self	depression	self	adult	88	0.48
Hubbard 2001	journal	sociometric status	peers	composite	other observer	child	114	0.08
Kang et al. 2005	journal	perceived reject/accept	self	distress	self	adult	54	0.39
King et al. 1996	journal	perceived reject/accept	self	depression	self	adolescent	224	0.54
Kistner et al. 1999	journal	combination	combination	depression	self	child	108	0.07
Kistner et al. 1999	journal	combination	combination	depression	self	adolescent	68	0.18
Kupersmidt & Patterson 1991	journal	sociometric status	peers	depression	self	child	328	0.17
Lansford et al. 2006	journal	sociometric status	peers	composite	teacher	child	91	0.04
Lansford et al. 2006	journal	sociometric status	peers	composite	teacher	child	94	0.07
Lee et al. 2002	journal	perceived reject/accept	self	distress	self	adult	214	0.32
Little & Garber 1995	journal	sociometric status	peers	depression	self	child	497	0.13
Lopez & DuBois 2005	journal	perceived reject/accept	self	depression	self	adolescent	508	0.48
Martin & Cole 2000	journal	sociometric status	peers	depression	self	child	59	0.42
Nolan et al. 2003	journal	perceived reject/accept	combination	depression	combination	adolescent	240	0.28
Nuijens 2006	dissertation/thesis	perceived reject/accept	combination	depression	self	child	99	0.10
Pallock 2003	dissertation/thesis	perceived reject/accept	self	distress	self	adolescent	847	0.26
Panak & Garber 1992	journal	combination	combination	depression	self	child	911	0.50
Patterson & Stoolmiller 1991	journal	perceived reject/accept	self	depression	combination	child	292	0.18
Prinstein & Aikins 2004	journal	sociometric status	peers	depression	self	adolescent	137	0.07
Sandstrom et al. 2003	journal	sociometric status	peers	depression	combination	child	95	0.60
Sandstrom et al. 2003	journal	sociometric status	peers	distress	self	child	25	0.56
Sandstrom et al. 2003	journal	sociometric status	peers	distress	self	child	29	0.35
Schwartz 2000	journal	sociometric status	peers	distress	self	child	354	0.05

(continued)

Table 2. (continued)

Study	Publication Source	Predictor	IV Rater	Type Affect Measured	Dependent Variable	Rater	Participant Age	N	Z <sub>r</sub>
Sheldon & Bettencourt 2002	journal	perceived reject/accept	self	composite	self		adult	134	0.30
Sinclair 2004 S1	dissertation/thesis	perceived reject/accept	self	depression	self		adult	198	0.32
Smith et al. 1999 S3	journal	perceived reject/accept	self	composite	self		adult	152	0.38
Upmanyu et al. 1988	journal	sociometric status	peers	depression	self		adolescent	117	0.24
Upmanyu et al. 1988	journal	sociometric status	peers	depression	self		adolescent	117	0.16
Walker et al. 2001	journal	sociometric status	peers	negative	teacher		child	49	0.44
Walker et al. 2001	journal	sociometric status	peers	negative	teacher		child	56	0.34
Walter & LaFreniere 2000	journal	sociometric status	peers	composite	teacher		child	56	0.41
Weissman 2005	dissertation/thesis	sociometric status	peers	depression	peers		adolescent	597	0.23

**Table 3.** Effect Sizes ( $z$ ) and Primary Coded Variables for Experimentally Manipulated Social Rejection Studies Measuring Self-Esteem as the Dependent Variable

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Self-Esteem Measured	$N$	$Z_r$
Baldwin & Main 2001	journal	primed/cued	another medium	other	implied	mixed individual/group	accept	state	28	0.32
Baldwin & Main 2001	journal	primed/cued	another medium	other	implied	mixed individual/group	neutral	state	28	0.27
Baldwin et al. 2003 S1	journal	primed/cued	another medium	other	implied	mixed individual/group	accept	state	20	0.00
Baldwin et al. 2003 S1	journal	primed/cued	another medium	other	implied	mixed individual/group	neutral	state	20	0.00
Baldwin et al. 2003 S2	journal	primed/cued	another medium	other	implied	mixed individual/group	accept	state	43	0.00
Baumeister et al. 2005 S3	journal	future rejection	face-to-face	experimenter	implied	group individual	neutral	state	20	0.00
Baumeister et al. 2005 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	state	20	0.00
Baumeister et al. 2005 S3	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	state	20	0.00
Blackhart 2006b	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	state	165	0.16
Blackhart 2006b	unpublished	left out	face-to-face	experimenter	implied	group mixed individual/group	neutral	state	212	-0.24
Buckley et al. 2004 S1	journal	left out	another medium	other	explicit	group individual	accept	state	74	0.41
Buckley et al. 2004 S1	journal	left out	another medium	other	explicit	individual	neutral	state	74	0.17
Buckley et al. 2004 S2	journal	left out	another medium	other	explicit	ind ostensibly w/ others	accept	state	41	0.74
Buckley et al. 2004 S2	journal	left out	another medium	other	ostracism	ind ostensibly w/ others	accept	state	42	0.52
Downs 1997	dissertation/thesis	left out	face-to-face	rejecter	ostracism	mixed individual/group	accept	state	76	0.17
Ellis et al. 2006 S1	unpublished	left out	another medium	rejecter	explicit	group ind ostensibly w/ others	accept	state	80	0.46

(continued)

**Table 3.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Self-Esteem Measured	N	$z_r$
Ellis et al. 2006 S2	unpublished	left out	another medium	rejecter	explicit	mixed individual/ group	accept	state	75	0.48
Ellis et al. 2006 S3	unpublished	left out	another medium	rejecter	explicit	mixed individual/ group	accept	state	77	0.35
Gross 2006	dissertation/ thesis	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	110	0.24
Koch & Sheppard 2001	unpublished	rejection threat	another medium	rejecter	implied	mixed individual/ group	accept	state	69	-0.02
Koch & Sheppard 2004	unpublished	rejection threat	another medium	rejecter	implied	mixed individual/ group	accept	state	96	0.32
Koch & Sheppard 2005 S1	unpublished	rejection threat	another medium	rejecter	implied	group individual	accept	state	102	0.65
Koch & Sheppard 2005 S2	unpublished	rejection threat	another medium	rejecter	implied	mixed individual/ group	accept	state	71	0.58
Koch 2005	unpublished	rejection threat	another medium	rejecter	implied	group mixed individual/ group	accept	state	42	0.07
Leary et al. 1995 S1	journal	future rejection	unspecified/ mixed	unspecified/ mixed	implied	group individual		self-feelings	150	0.70
Leary et al. 1995 S2	journal	relived	unspecified/ mixed	unspecified/ mixed	unspecified/ mixed	individual		self-feelings	160	0.81
Leary et al. 1995 S3	journal	left out	face-to-face	experimenter	implied	ind ostensibly w/ others	accept	state	112	0.41
Leary et al. 1995 S4	journal	left out	another medium	other	implied	ind ostensibly w/ others	accept	state	60	0.23
Leary et al. 1995 S4	journal	left out	another medium	other	implied	ind ostensibly w/ others	neutral	state	60	0.00
Leary et al. 2001 S1	journal	left out	face-to-face	experimenter	implied	ind ostensibly w/ others	accept	state	103	0.31
Leary et al. 2001 S2	journal	left out	face-to-face	experimenter	implied	ind ostensibly w/ others	accept	state	115	0.29
Murray et al. 2002 S1	journal	rejection threat	face-to-face	experimenter	implied	individual	neutral	state	66	0.00
Murray et al. 2002 S2	journal	rejection threat	face-to-face	experimenter	implied	individual	neutral	state	64	0.22
Murray et al. 2002 S3	journal	rejection threat	face-to-face	experimenter	implied	individual	neutral	state	65	0.00

(continued)

**Table 3.** (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Self-Esteem Measured	N	$z_r$
Nadler et al. 1980	journal	left out	face-to-face	rejecter	explicit	group	neutral	state	65	0.22
Nesdale & Lambert 2007	journal	left out	face-to-face	experimenter	explicit	ind ostensibly w/ others	accept	state	88	0.00
Nezlek et al. 1997 S1	journal	left out	another medium	other	implied	ind ostensibly w/ others	accept	state	116	0.22
Nezlek et al. 1997 S2	journal	left out	face-to-face	experimenter	implied	ind ostensibly w/ others	accept	state	153	0.00
Park & Crocker 2006	unpublished	left out	another medium	rejecter	explicit	mixed individual/group	neutral	state	90	0.20
Poulsen 2003	dissertation/thesis	left out	face-to-face	rejecter	ostracism	group	neutral	state	91	0.06
Poulsen 2003	dissertation/thesis	left out	face-to-face	rejecter	ostracism	group	perp	state	124	0.12
Robinson et al. 2006 S1	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	state	122	0.28
Robinson et al. 2006 S2	unpublished	left out	face-to-face	experimenter	implied	mixed individual/group	accept	state	156	0.34
Smith & Williams 2004	journal	left out	another medium	rejecter	ostracism	group	accept	state	40	0.52
Snapp & Leary 2001	journal	left out	another medium	rejecter	ostracism	mixed individual/group	accept	state	64	0.23
Sommer & Baumeister 2002 S1	journal	primed/cued	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	accept	self-feelings	32	0.18
Sommer & Baumeister 2002 S1	journal	primed/cued	unspecified/mixed	unspecified/mixed	unspecified/mixed	individual	negative nonsocial	self-feelings	32	0.16
Twenge et al. 2003 S3	journal	future rejection	face-to-face	experimenter	implied	individual	accept	state	27	0.26
Twenge et al. 2003 S3	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	state	27	-0.06
Twenge et al. 2003 S6	journal	future rejection	face-to-face	experimenter	implied	individual	accept	state	20	0.00
Twenge et al. 2003 S6	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	state	20	0.00
Twenge et al. 2003 S6	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	state	20	0.00
Twenge et al. 2007 S1	journal	future rejection	face-to-face	experimenter	implied	individual	accept	state	34	0.37
Twenge et al. 2007 S1	journal	future rejection	face-to-face	experimenter	implied	individual	neutral	state	34	-0.05
Twenge et al. 2007 S1	journal	future rejection	face-to-face	experimenter	implied	individual	negative nonsocial	state	34	-0.12

(continued)

Table 3 (continued)

Study	Publication Source	Type Rejection Manipulation	Means Rejection Manipulation	Directness Rejection Manipulation	Extent Rejection Manipulation	Study Setting	Control Group	Type Self-Esteem Measured	N	$z_i$
Vandavelde & Miyahara 2005	journal	imagined	face-to-face	rejecter	explicit	individual	negative ego threat	state	100	0.91
Wilcox & Mitchell 1977	journal	left out	face-to-face	experimenter	explicit	group	accept	state	20	0.68
Williams et al. 1998 S1	journal	relived	unspecified/mixed	unspecified/mixed	ostracism	individual	perp	state	48	0.75
Williams et al. 1998 S2	journal	relived	unspecified/mixed	unspecified/mixed	ostracism	individual	perp	state	63	0.50
Williams et al. 2000 S1	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	742	0.33
Williams et al. 2002 S1	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	390	0.55
Williams et al. 2002 S3	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	36	0.69
Williams et al. 2002 S4	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	30	0.15
Williams et al. 2002 S4	journal	left out	face-to-face	rejecter	ostracism	group	accept	state	30	0.80
Zadro et al. 2004 S1	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	52	0.42
Zadro et al. 2004 S2	journal	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	77	0.47
Zadro et al. 2005 S1	journal	left out	face-to-face	rejecter	ostracism	group	perp	state	18	-0.07
Zadro et al. 2005 S2	journal	left out	face-to-face	rejecter	ostracism	group	perp	state	30	0.05
Zadro et al. 2005 S3	journal	left out	face-to-face	rejecter	ostracism	group	accept	state	31	0.68
Zadro et al. 2005 S3	journal	left out	face-to-face	rejecter	ostracism	group	perp	state	48	0.15
Zeigler-Hill & Showers 2007 S2	unpublished	left out	another medium	rejecter	ostracism	ind ostensibly w/ others	accept	state	138	0.02



**Table 4.** Effect Sizes ( $z$ ) and Primary Coded Variables for Real-World Social Rejection Studies Measuring Self-Esteem as the Dependent Variable

Study	Publication Source	Predictor	IV Rater	Type Self-Esteem Measured	DV Rater	Participant Age	N	$z_r$
Anderman 2002 S2	journal	perceived reject/accept	self	self-concept	self	adolescent	745	0.28
Barnow et al. 2005	journal	perceived reject/accept	combination	trait	self	adolescent	168	0.22
Bishop & Inderbitzen 1995	journal	sociometric status	peers	trait	self	adolescent	81	0.19
Bishop & Inderbitzen 1995	journal	sociometric status	peers	trait	self	adolescent	81	0.10
Boivin & Begin 1989	journal	sociometric status	peers	trait	self	child	115	0.55
Boivin & Begin 1989	journal	sociometric status	peers	trait	self	child	132	0.21
Carton 1996	dissertation/thesis	sociometric status	peers	self-concept	self	child	140	0.31
Estévez López et al. 2006	journal	sociometric status	peers	trait	self	adolescent	843	0.24
Gest et al. 2005	journal	sociometric status	peers	self-concept	self	child	400	0.27
Henderson 1991	dissertation/thesis	sociometric status	peers	self-concept	self	child	163	0.11
Hitlan, Cliffron, & DeSoro 2006	journal	perceived reject/accept	self	state	self	adult	223	0.24
Leary et al. 1995 S5	journal	perceived reject/accept	self	trait	self	adult	220	0.59
Leary et al. 2001 S3	journal	perceived reject/accept	self	trait	self	adult	180	0.58
Lee & Robbins 1998 S1	journal	perceived reject/accept	self	trait	self	adult	185	0.62
Lee & Robbins 1998 S2	journal	perceived reject/accept	self	state	self	adult	44	0.44
Lemay & Ashmore 2006	journal	perceived reject/accept	self	trait	self	adult	172	0.32
Lopez & DuBois 2005	journal	perceived reject/accept	self	trait	self	adolescent	508	0.59
Markunas & Kelly 2006	unpublished	past rejection	self	state	self	adult	30	0.88
Murray et al. 2003	journal	perceived reject/accept	self	state	self	adult	253	0.05
Nuijens 2006	dissertation/thesis	perceived reject/accept	combination	self-concept	self	child	99	0.29
Pallock 2003	dissertation/thesis	perceived reject/accept	self	trait	self	adolescent	847	0.12
Sinclair 2004 S1	dissertation/thesis	perceived reject/accept	self	trait	self	adult	198	0.42
Sletta et al. 1996	journal	combination	combination	trait	self	adolescent	95	0.21
Stanley & Arora 1998	journal	perceived reject/accept	self	trait	self	adolescent	105	0.24
Tracey 1997	dissertation/thesis	sociometric status	peers	self-concept	self	adolescent	94	0.31
Walter 2003	dissertation/thesis	sociometric status	peers	self-concept	self	adolescent	132	0.28
Weissman 2005	dissertation/thesis	sociometric status	peers	trait	self	adolescent	597	0.14
Wright et al. 2000	journal	perceived reject/accept	self	trait	self	adult	88	0.00

One significant moderator of the average weighted effect size for affect was the type of control group. Comparing rejected individuals to participants in a neutral control group produced a somewhat smaller effect size ( $z_r = 0.26$ ) than when rejected participants were compared to accepted individuals ( $z_r = 0.35$ ) or to the perpetrators of rejection ( $z_r = 0.54$ ). All of these differences were significant, however, indicating that rejected persons felt significantly worse than neutral controls. Thus, laboratory manipulations of rejection cause a significant shift in emotion toward a state less favorable than what a neutral control condition elicits.

The larger difference between rejected and accepted persons would seemingly suggest that happy feelings among accepted persons were a contributing factor. Consistent with that interpretation, the difference between accepted conditions and neutral conditions had an average weighted effect size ( $z_r$ ; fixed-effects model) of 0.17 ( $k = 17$ ,  $Z = 4.46$ ,  $p < .05$ , 95% CI = 0.09, 0.24). Thus, across all studies, evidence suggests that acceptance produced a slight affective boost compared to neutral control conditions.

When rejected participants were compared to participants in a negative nonsocial control group, a smaller effect size was found ( $z_r = 0.17$ ) than when participants were compared to those in a neutral control group. This result suggests, however, that even when comparing rejected participants to those experiencing another negative, yet nonsocial, outcome, rejected participants still report feeling worse. The only comparison group category that failed to differ from the rejection conditions consisted of ego threats such as task failure ( $z_r = -0.02$ ).

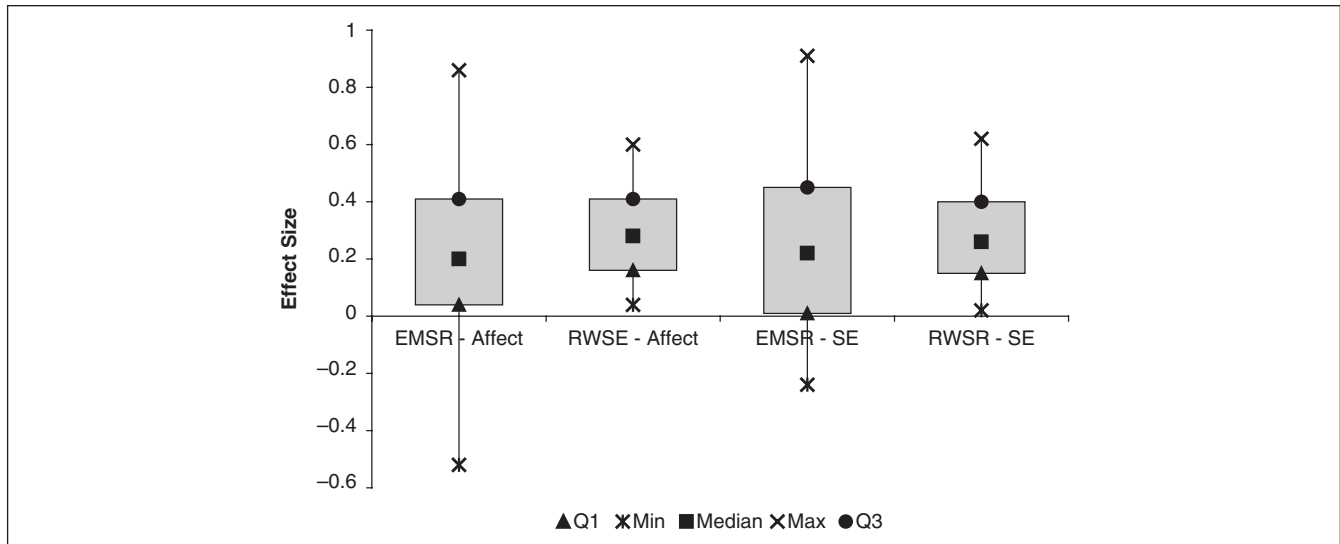
Taken together, these findings indicate that rejection causes significant shifts in emotion and affect, away from the positive and toward the negative. Rejected people feel worse than accepted and neutral ones. These shifts are bigger than those caused by negative nonsocial events (e.g., warnings about health problems) and comparable to those caused by blows to self-esteem.

How bad did rejected persons actually feel? For this, we shifted from the relative comparisons to look at absolute levels of mood, affect, and emotional state. All results were converted to 21-point scales with zero as midpoint (see Table 5). For studies that had participants rate their feelings on bipolar scales, the converted scale ran from -10 (thoroughly and maximally negative) to +10 (completely positive). Acceptance and neutral control conditions produced a mildly to moderately positive state ( $M = 2.86$  and  $2.80$ , respectively). Perhaps more surprising, the average report across the rejection conditions of the 29 studies using this type of measure was also, though just barely, on the positive side of neutral ( $M = 0.95$ ).

A similar conclusion emerged from studies that assessed both positive and negative affect separately. Net overall emotion scores were obtained by subtracting positive minus negative affect (and then dividing by half), such that +10 indicated wholly positive and -10 wholly negative affect. Rejected participants' overall affect balance was again on the positive side ( $M = 2.57$ ), indicating that they felt somewhat more good than bad. Acceptance conditions produced an even more positive net emotional state, as would be expected ( $M = 4.11$ ). Neutral control conditions ( $M = 3.49$ ) produced slightly more positive emotion than rejection conditions but less than acceptance conditions. We also tried combining the results from the bipolar measures with the net overall scores obtained by subtracting positive minus negative affect. Once again, rejected participants reported a mean affect score that was slightly above neutral and mildly positive ( $M = 1.59$ ), whereas accepted and neutral control participants reported a mean affect score that was mildly to moderately positive ( $M = 3.46$  and  $3.14$ , respectively).

In attempting to tease apart which means differed significantly from each other, we were hampered by the loss of statistical power in shifting to these smaller samples. With bipolar measures, none of the three means differed significantly from either of the others, although the difference between acceptance and rejection conditions was marginally significant (i.e.,  $0.95$  vs.  $2.86$ ;  $p = .053$ ). With the affect balance measures (positive minus negative), rejection was significantly worse than acceptance ( $p < .01$ ), but the neutral controls were not significantly different from either. Combining bipolar scales with affect balance measures yielded the same conclusion: Acceptance was significantly different from rejection, but neutral controls did not differ from either.

Some studies reported results for only positive or only negative emotion. We combined these with the means from studies that measured both positive and negative emotion, but on separate scales, to furnish the largest samples. Thus, some studies are included in both the positive and negative emotion results, and other studies in only positive or negative affect results, but not both. For reports of exclusively negative or positive affect, -10 represented a complete absence of that feeling and +10 represented the maximum, with 0 representing the moderate middle. Across these studies, the highest level of emotion was the moderate level of positive affect reported by accepted participants ( $M = -0.14$ ). Acceptance produced very little negative affect ( $M = -8.44$ ). Rejected participants reported low amounts of both positive ( $M = -3.01$ ) and negative affect ( $M = -6.83$ ). Likewise, those in neutral control conditions reported low levels of both negative affect ( $M = -7.68$ ) and positive affect ( $M = -3.61$ ). The neutral control conditions did not differ significantly from the rejection



**Figure 1** Box plots of unweighted effect sizes ( $z$ ) for each meta-analysis.

NOTE: EMSR = experimentally manipulated social rejection; RWSR = real-world social rejection; SE = self-esteem.

conditions on either positive or negative emotion. Acceptance conditions yielded significantly more positive emotion than either rejection or neutral control (both  $ps < .01$ ). Acceptance produced significantly less negative emotion than rejection ( $p < .01$ ), but acceptance and neutral controls did not differ.

Taken together, these results sharply qualify our earlier findings about relative differences between conditions. Rejected participants have consistently reported less positive and more negative feelings than participants in acceptance conditions—but they were not, on the whole, feeling bad, at least in terms of the literal meaning of their self-reports. In general, they reported low levels of all emotions, and on balance they reported, if anything, slightly more positive than negative feelings. Put another way, rejection causes a shift in emotional state away from the positive and toward the negative, but the shift ends in a neutral or mildly positive state. There was no definite evidence of any actual emotional distress among rejected persons.

*Moderators of the emotion effects.* Moderator analyses (weighted least squares multiple regression) also showed that the type of rejection, the study setting, and the proportion of female participants were significant moderators of the average weighted effect size for affect (see Table 6). Analyses revealed a significantly larger effect size when participants were left out of a group ( $z_r = 0.37$ ) than when they anticipated future rejection ( $z_r = 0.21$ ), indicating that rejected participants (relative to those in a control group) reported experiencing more negative affect when they were actually rejected, and

**Table 5** Strength of Negative Affect for Rejected and Accepted Participants Following Rejection/Acceptance Manipulations

Type of Affect Assessed	<i>M</i>	<i>SD</i>	<i>n</i>
Rejected participants			
Negative affect	-6.83 <sup>a</sup>	1.92	28
Positive affect	-3.01 <sup>a</sup>	2.07	31
PA - NA	2.57 <sup>a</sup>	1.01	19
Bipolar affect	0.95	2.62	29
Bipolar affect & PA - NA	1.59 <sup>a</sup>	2.26	48
Direct rejection	2.24	0.93	16
Anticipated (future) rejection	2.40	1.78	12
Imagined or relived rejection	0.67	2.91	9
Ostracism	0.52	2.99	11
Accepted participants			
Negative affect	-8.44	0.78	24
Positive affect	-0.14 <sup>b</sup>	1.78	30
PA - NA	4.11	1.06	18
Bipolar affect	2.86	3.04	19
Bipolar affect & PA - NA	3.46	2.36	37
Neutral control participants			
Negative affect	-7.68	2.42	8
Positive affect	-3.61	2.56	10
PA - NA	3.49	0.78	5
Bipolar affect	2.80	1.48	5
Bipolar affect & PA - NA	3.14	1.18	10

NOTE: NA = negative affect; PA = positive affect. For NA, -10 indicates an absence of NA, +10 indicates high NA, and 0 indicates moderate NA. For PA, -10 indicates an absence of PA, +10 indicates high PA, and 0 indicates moderate PA. For bipolar affect and PA - NA, -10 indicates very NA, +10 indicates very PA, and 0 = neutral affect.

a. Denotes a significant difference ( $p < .01$ ) from the acceptance condition.

b. Denotes a significant difference ( $p < .01$ ) from the neutral control condition.

left out of a group activity, than when they merely anticipated a future rejection experience. Along the same lines, participants reported more negative affect when left out of a real group ( $z_r = 0.46$ ) than when they were left out of an ostensible group ( $z_r = 0.29$ ).

The largest effect size, though, was found when participants were asked to imagine a rejection scenario ( $z_r = 0.49$ ), implying that participants experienced greater negative affect when they had just imagined a rejection experience than when they had actually been rejected by others. Because only six studies included in the analyses employed this rejection manipulation, the difference between this effect size and that for other types of rejection did not reach significance. Still, the relatively large effect of imagined rejection may be useful for future researchers to note.

Relived rejection ( $z_r = 0.21$ ) and primed/cued rejection ( $z_r = 0.19$ ) produced effect sizes similar to anticipated future rejection. Threat of possible rejection ( $z_r = 0.11$ ) produced the smallest average weighted effect size for affect.

The study setting was also a significant moderator of the effect size for affect following rejection. The largest effect size was found for studies that employed a group setting ( $z_r = 0.48$ ), followed by a mixed individual and group setting (e.g., participant interacts with a group and then is separated from the others for the remainder of the study;  $z_r = 0.35$ ) and individuals ostensibly with others ( $z_r = 0.32$ ). The smallest average weighted effect size came from studies in which participants were in an individual setting ( $z_r = 0.24$ ). In other words, participants rejected by others in a group setting reported more negative affect than those in other settings. The actual presence of other people appears to intensify the emotional effect of rejection. (We note, however, that the large effects associated with imagined rejection come from studies that ran people individually.)

The gender composition of the study sample was a significant predictor of average weighted effect size for affect. The larger the proportion of female participants in a study, the larger the effect size for affect ( $r = 0.18$ ). This could mean that rejection manipulations have a greater effect on female than male participants, but it might simply reflect higher levels of emotional expressiveness among women.

No other factors significantly moderated the average weighted effect size for affect. That is, we did not find that the means, directness, or extent of the rejection manipulation, the relationship the participant had with the rejecter, the type of affect measured or how affect was measured, the characteristics of the participants (other than the gender composition of the study sample), the source or year of publication, or the research group conducting the study significantly impacted affect following

**Table 6.** Average Weighted Effect Sizes ( $z_r$ ) for Affect as a Function of the Type of Rejection, the Study Setting, and the Comparison Control Group

	$z_r$	SE	$n$
Control group			
Accepted	0.35	0.03	87
Neutral	0.26 <sup>a</sup>	0.04	44
Negative nonsocial	0.17 <sup>a</sup>	0.08	25
Negative ego threatening	-0.02 <sup>a*</sup>	0.13	3
Perpetrator of rejection	0.54 <sup>b</sup>	0.09	5
Type of rejection			
Left out of a group	0.37 <sup>a</sup>	0.03	67
Left out of a real group	0.46 <sup>c</sup>	0.05	37
Left out of an ostensible group	0.29 <sup>d</sup>	0.04	30
Anticipated future rejection	0.21 <sup>b</sup>	0.05	65
Rejection threat	0.11	0.11	5
Relived rejection	0.21	0.06	17
Imagined rejection	0.49	0.11	6
Primed or cued rejection	0.19	0.13	5
Study setting			
Individual setting	0.24 <sup>a</sup>	0.03	100
Individual ostensibly w/ others	0.32	0.05	21
Mixed individual and group setting	0.35	0.05	28
Group setting	0.48 <sup>b</sup>	0.06	16

NOTE: Differing superscripts represent a significant difference ( $p < .05$ ) within each moderating variable.

\*Denotes a significant difference ( $p < .05$ ) from the accepted group.

rejection. We examined whether some moderator variables were confounded with others, and there were no significant interactions between moderator variables.

*Real-world social rejection* ( $k = 47$ ). Studies of exclusion in the real world, which is to say not the laboratory, typically examined sociometric status (i.e., peer nominations of liking and disliking) or perceived rejection, and these characterizations are correlated with chronic emotional tendencies. The average weighted effect size ( $z_r$ ; random-effects model) for longitudinal, cross-sectional, and quasi-experimental studies examining affect in response to real-world social rejection was 0.28 (0.41 for a fixed-effects model), which is significantly different from zero,  $Z = 10.25$ ,  $p < .01$ , 95% CI = 0.23, 0.33. This result shows that individuals continually or chronically rejected by their peers, and individuals who perceive themselves to have been rejected by others, report greater overall negative affect, on average, than those who are not rejected by others. The average unweighted effect size ( $z_r$ ) was 0.29 ( $SD = 0.16$ ,  $SE = .02$ ),  $t(46) = 12.68$ ,  $p < .01$ . The median unweighted effect size was 0.28, min = 0.04,  $Q_1 = 0.16$ ,  $Q_3 = 0.41$ , and max = 0.60 (see Figure 1). No significant moderators of affect in response to real-world rejection were found.

To be sure, the correlational nature of these results allows the possibility that chronic tendencies toward

negative affect cause peer rejection, rather than the reverse. Still, these results converge with the laboratory findings to be consistent with the hypothesis that rejection produces emotional states that are less pleasant than those associated with acceptance.

### Self-Esteem

*Experimentally manipulated social rejection* ( $k = 72$ ). We found significant effects of acceptance versus rejection on self-esteem, although these did not precisely mirror the effects on emotion and affect. Comparing rejection conditions against all others, the average weighted effect size ( $z_r$ ; random-effects model) for studies examining self-esteem in response to a social rejection manipulation in the laboratory was 0.30 (0.32 for a fixed-effects model), which is significantly different from zero,  $Z = 7.35$ ,  $p < .01$ , 95% CI = 0.22, 0.38. This indicates that rejected individuals report significantly lower self-esteem than the nonrejected persons in all other treatment conditions. The average unweighted effect size ( $z_r$ ) was 0.29 ( $SD = 0.34$ ,  $SE = .04$ ),  $t(71) = 7.35$ ,  $p < .01$ . The median unweighted effect size was 0.22,  $\min = -0.24$ ,  $Q_1 = 0.01$ ,  $Q_3 = 0.45$ , and  $\max = 0.91$  (see Figure 1).

As with affect, the type of control group was a significant moderator of the average weighted effect size for self-esteem, and comparing rejected individuals to participants in a neutral control group produced a smaller effect size than when rejected participants were compared to accepted individuals ( $z_r = 0.32$ ) or to the perpetrators of rejection ( $z_r = 0.30$ ). In fact, and unlike the emotion findings, an effect size near zero ( $z_r = 0.03$ ) was found when rejected participants were compared to those in a neutral control group, indicating that laboratory manipulations of social exclusion per se have not reduced self-esteem. The difference reported above between rejection and all other conditions might therefore be due to boosts in self-esteem in some conditions. Consistent with that view, we found that the self-esteem of accepted participants across multiple studies was significantly higher than that of the neutral control conditions, with an average weighted effect size ( $z_r$ ; fixed-effects model) of 0.27 ( $k = 8$ ,  $Z = 5.59$ ,  $p < .01$ , 95% CI = 0.18, 0.37).

It therefore appears that experimental manipulations of rejection may have little to no effect on self-esteem, whereas acceptance bolsters self-esteem. Consistent with this interpretation, an effect size of zero was found when rejected participants were compared to those in a negative nonsocial control group ( $z_r = -.004$ ), because again one would expect those conditions to have no effect on self-esteem.

*Moderators of self-esteem effects.* Moderator analyses (weighted least squares multiple regression) also

showed that the type of rejection manipulation, the directness of the rejection, the extent of the rejection, and the research group conducting the study were all significant moderators of the average weighted effect size for self-esteem (see Table 7). We consider each of these in turn, using the omnibus comparison of rejection conditions against all other conditions combined.

Relived past rejection produced a significantly larger effect size for self-esteem ( $z_r = 0.73$ ) than when participants anticipated future rejection ( $z_r = 0.35$ ), were left out of a group ( $z_r = 0.27$ ), experienced a rejection threat ( $z_r = 0.27$ ), or had rejection primed or cued ( $z_r = 0.09$ ). The difference between reliving past rejection and rejection priming is quite striking, with the latter having roughly zero effect on self-esteem whereas the former had a large one. Reliving a past rejection experience probably encourages participants to recall an especially vivid and impactful occasion, and moreover, it enables the measures to encompass changes in self-esteem that may have been delayed, unlike the other procedures.

As reported previously, imagined rejection had the largest effect on emotion, which raised the question of whether it, at least, might affect self-esteem too. It is unfortunate that only one study measured self-esteem following imagined rejection. This study (Vandeveldt & Miyahara, 2005) did produce a large effect size, but it is obvious that one cannot do a meta-analysis on a single study. The possible effect of imagined rejection on self-esteem thus remains a tantalizing opportunity for further research.

It therefore appears that when participants relived a past rejection experience, they reported much lower self-esteem than when participants experienced other types of rejection manipulations (relative to nonrejected participants—unfortunately, these studies lacked neutral controls). Anticipated future rejection, being left out of a group, and rejection threat produced small to moderate effects on self-esteem. Rejection priming and cuing had no discernible effect on self-esteem.

Further analyses indicated that ostracism ( $z_r = 0.33$ ) and explicit rejection ( $z_r = 0.36$ ) resulted in significantly larger effect sizes than implied rejection ( $z_r = 0.20$ ), suggesting that explicit social exclusion has a greater effect on self-esteem (i.e., results in lower self-esteem) than when rejection is merely implied. Explicit rejection and ostracism, however, produced similar effect sizes for self-esteem. In addition, analyses show that rejection feedback directly from the rejecter produced a significantly greater drop in self-esteem ( $z_r = 0.37$ ) than rejection feedback from the experimenter ( $z_r = 0.14$ ). Rejection from another or unidentified entity (e.g., through a message on the computer or a piece of paper) produced an effect size ( $z_r = 0.19$ ) similar to when rejection feedback was delivered to participants by the experimenter.

**Table 7.** Average Weighted Effect Sizes ( $z_r$ ) for Self-Esteem as a Function of the Research Group, the Type of Rejection, the Directness of Rejection, the Extent of the Rejection Manipulation, and the Comparison Control Group

	$z_r$	SE	$n$
Control group			
Accepted	0.32 <sup>a</sup>	0.03	43
Neutral	0.03 <sup>b</sup>	0.06	15
Negative nonsocial	-0.004	0.18	5
Perpetrator of rejection	0.30	0.11	6
Type of rejection			
Left out of a group	0.27 <sup>a</sup>	0.04	41
Anticipated future rejection	0.35	0.12	12
Rejection threat	0.27 <sup>a</sup>	0.10	8
Relived rejection	0.73 <sup>b</sup>	0.13	3
Primed or cued rejection	0.09 <sup>a</sup>	0.14	7
Extent of rejection			
Explicit rejection	0.33	0.09	10
Implied rejection	0.20 <sup>a</sup>	0.05	37
Ostracism	0.36 <sup>b</sup>	0.05	21
Unspecified/mixed rejection	0.64 <sup>b</sup>	0.15	3
Directness of rejection			
From rejecter	0.37 <sup>a</sup>	0.05	30
From experimenter	0.14 <sup>a*</sup>	0.06	23
From other/unidentified entity	0.19 <sup>a</sup>	0.09	13
From unspecified/mixed source	0.65 <sup>b</sup>	0.09	6
Research group			
Baumeister, Twenge, and colleagues	-0.05 <sup>a</sup>	0.10	15
Leary and colleagues	0.44 <sup>b</sup>	0.08	14
K. Williams and colleagues	0.44 <sup>b</sup>	0.07	14
Independent	0.27	0.06	29

NOTE: Differing superscripts represent a significant difference ( $p < .05$ ) within each moderating variable.

\*Denotes a significant difference ( $p < .05$ ) from rejecter.

Last, we found that the research group/lab that conducted the study significantly affected the average weighted effect size for self-esteem. Studies conducted by Baumeister, Twenge, and their colleagues produced a significantly smaller effect size ( $z_r = -0.05$ ) than studies conducted by Leary and his colleagues ( $z_r = 0.44$ ), by Williams and his colleagues ( $z_r = 0.44$ ), or by other researchers ( $z_r = 0.27$ ). It is likely that this finding is a direct result of methods employed by various researchers. For instance, Baumeister, Twenge, and their colleagues commonly employ explicit rejection and anticipated future rejection manipulations, whereas Williams and his colleagues commonly employ ostracism manipulations. Furthermore, Baumeister, Twenge, and colleagues were more likely than other researchers to include more than one comparison control group, including neutral controls, which as we noted yield relatively weak effects, whereas the Williams group typically compares rejection (ostracized) with acceptance conditions. We attempted to provide a quantitative test of this explanation by computing research group  $\times$  method interactions. No significant effects were found, but this

may be due to the severe loss of statistical power caused by the very small sample sizes that were left once these factors were broken into smaller subgroups.

No other variables were found to be significant moderators of effect size for self-esteem. That is, we did not find that the means of the rejection, the relationship that the participant had with the rejecter, the study setting, the participant characteristics, the type of self-esteem assessed, or the source or year of publication significantly altered the relationship between social exclusion and self-esteem. Additional tests for possible interactions between moderator variables yielded no significant results.

Because acceptance rather than rejection produced the significant differences (as compared with neutral control conditions) on self-esteem, we also tested for moderators of the boost in self-esteem from acceptance. None was significant. Unfortunately, there were only eight studies that furnished usable data, and detection of moderation was probably impossible with such a small sample.

*Real-world social rejection* ( $k = 28$ ). As with affect, studies examining self-esteem in response to exclusion in the real world typically examined sociometric status or perceived acceptance, and these characterizations are correlated with trait self-esteem. The average weighted effect size ( $z_r$ ; random-effects model) for longitudinal, cross-sectional, and quasi-experimental studies examining self-esteem in response to real-world social rejection was 0.29 (0.28 for a fixed-effects model), which is significantly different from zero,  $Z = 10.55$ ,  $p < .01$ , 95% CI = 0.27, 0.35. This result shows that those continually or chronically rejected by others, and those perceiving rejection by others, report significantly lower trait self-esteem than nonrejected individuals. The overall unweighted effect size ( $z_r$ ) was 0.29 ( $SD = 0.17$ ,  $SE = .03$ ),  $t(27) = 8.67$ ,  $p < .01$ . The median unweighted effect size was 0.26, min = 0.02,  $Q_1 = 0.15$ ,  $Q_3 = 0.40$ , and max = 0.62 (see Figure 1). There were no significant moderators of self-esteem in response to real-world rejection.

Once again, the correlational nature of these results allows the possibility that chronic tendencies toward lower self-esteem may cause peer rejection or that some third variable may account for these results. Furthermore, these results are not entirely consistent with those found in laboratory studies, in that rejection did not differ from neutral controls. Perhaps, however, after one has had time to reflect on being rejected, or experiences rejection chronically, lower self-esteem may eventually result.

#### *Affect Versus Self-Esteem: Comparison of Moderators*

Inspection of the significant moderating variables of the average weighted effect sizes for affect and self-esteem

revealed similarities and differences. The comparison control group was a significant moderator of both affect and self-esteem. Larger effect sizes were found for affect and self-esteem when rejected individuals were compared to accepted individuals and to the perpetrators of rejection, rather than comparing simply against neutral controls or other treatments. Indeed, comparing rejected persons against neutral controls yielded a nearly zero effect on self-esteem. The same comparison yielded a small but significant difference in affect.

The type of rejection manipulation was another significant moderator of affect and self-esteem. Imagining a rejection scenario produced the largest effects on affect. It is unfortunate that we could not assess whether that would be true for self-esteem also, because we found only one study that assessed changes in self-esteem following imagined rejection (although it was a large effect, thus similar to affect).

Reliving past rejection experiences produced only a moderate effect size for affect ( $z_r = 0.21$ ) but a large effect size for self-esteem ( $z_r = 0.73$ )—indeed, the largest effect we found on self-esteem. This greater effect on self-esteem than on emotion should perhaps not be argued too strongly, for two reasons. First, the sample size is small. The large effect on self-esteem was based on only 3 studies (unlike the effect on emotion, which had 17 studies). Moreover, 2 of those 3 studies compared rejected participants to the perpetrators of rejection (which typically has yielded large differences in these analyses), and none had a neutral control (which yielded the smallest differences). The results for imagined and relived rejection perhaps suggest, though, that reliving a past rejection experience, or imagining a rejection experience, may impact affect and self-esteem differentially from an actual rejection experience (e.g., being left out of a group, anticipating future rejection, being faced with the threat of rejection by another).

Several moderator variables impacted affect and not self-esteem, or vice versa. The study setting (whether participants were in a group setting, were in a mixed group and individual setting, were ostensibly with others but alone, or were alone) significantly impacted the effect size for affect, but it had no impact on self-esteem. The directness and extent of the rejection experience, on the other hand, significantly impacted the average weighted effect size for self-esteem, but had no impact on affect. Oddly, different research groups obtained reliably different effects with self-esteem but not with affect.

#### *Possible Publication Biases*

Although the source of publication was not found to be a significant moderator of average effect size for any of the meta-analyses, file drawer calculations were conducted

(Rosenthal, 1979) and funnel plots (sample sizes by effect sizes; Light & Pillemer, 1984) were plotted and analyzed to determine whether there may be publication biases present. Although every effort was made to include unpublished data in this study, we believe we were not able to obtain all unpublished data examining affect or self-esteem in relation to rejection. As a result, we felt it necessary to examine for the possibility of a publication bias. In analyzing the funnel plots (see Figure 2), there do not appear to be any publication biases for any of the meta-analyses conducted.

File drawer calculations also indicate similar results. For laboratory studies measuring affect after a rejection manipulation,  $k_0 = 1,421$ , indicating that 1,421 studies with an effect size of zero would need to be added to the meta-analysis in order for the average weighted effect size to be nonsignificant. For laboratory studies measuring self-esteem after a rejection manipulation,  $k_0 = 915$ . For studies measuring affect in relation to real-world rejection,  $k_0 = 1,245$ . Finally, for studies measuring self-esteem in relation to real-world rejection,  $k_0 = 759$ . These file drawer calculations, as well as the funnel plots, indicate that there are no publication biases present in the meta-analyses examining affect and self-esteem in response to experimentally manipulated or real-world rejection. As a result, although it is reasonable to assume that our results may have differed somewhat (e.g., the average weighted effect sizes found may have been slightly smaller) had we included more unpublished studies (as unpublished studies may be more likely to find weak or nonsignificant results), we would need to include hundreds more studies with an effect size of zero to find nonsignificant average weighted effect sizes for affect and self-esteem.

## DISCUSSION

We began this article with several strong hypotheses about the effects of social exclusion, and we have now tested them against a substantial body of published data. The findings have not precisely corresponded to any of the major theories we noted, but several clear conclusions have emerged.

#### *Emotion and Affect*

Laboratory manipulations of rejection versus acceptance have clear emotional impact. Some prior disagreements among researchers as to whether these manipulations alter emotional states may be due to the fact that the effects are not very large, and smallish single-study samples may lack the statistical power necessary to detect them. The meta-analytical combining of studies leaves no doubt, however, that both acceptance and rejection

conditions produce emotional states that differ significantly from each other and from those of neutral controls. Specifically, rejected people feel worse than neutral controls, whereas accepted persons feel slightly better. The emotional impact of rejection was larger than that of acceptance.

Feeling worse does not necessarily entail feeling bad, however. When we compiled data about the absolute levels of affect and emotion, we found that rejected persons did not, on average, report affective states that could be described as negative, distress, or upset. We looked at the data multiple ways, and they indicated that rejected participants in laboratory studies have typically reported emotional states that are almost precisely neutral, or indicating slightly more positive than negative emotion. This was true for group rejection studies, ostracism studies, anticipated lonely future studies, and the rest. Contrary to intuition and some theoretical predictions, the immediate reaction to being rejected is a neutral emotional state rather than a negative one, on average.

Precisely how the emotional states of rejected persons differed from those of neutral controls is a theoretically important question, but our results were not entirely consistent. In the broadest and most powerful analysis, in which the effect sizes for all studies and all types of measures were combined, we did find a significant difference: Rejected people felt worse than neutral controls. The significance evaporated, however, when we tried to limit that comparison to any specific type of measure or to either positive or negative emotion. Hence, we cannot say anything specific about the difference between the emotional states of rejected persons and neutral controls, other than the effect seems to be sufficiently weak that it can only be found with quite large combinations of data and lumping all measures and manipulations together.

With acceptance, the picture was only slightly clearer. As with rejection, acceptance differed from neutral controls in the omnibus analysis that combined the effect sizes from all studies and all types of measures. In attempting to look more closely at where the effect was most reliable, we found one significant difference: Accepted persons had more positive emotion than neutral controls (when positive emotion was measured separately from negative).

The significant differences between rejected participants and others therefore must be explained as arising from the difference between the somewhat positive states found in acceptance and neutral conditions and the affectively neutral state caused by rejection. To judge by the neutral control condition data, the baseline mood of laboratory participants across these studies was apparently mildly positive, with low levels of positive

emotions outweighing the extremely low levels of negative emotions. Receiving acceptance feedback typically caused a small further improvement in mood, especially a surge up to an intermediate level of positive emotion.

The effect of rejection manipulations was to wipe away most of those good feelings. Rejected people felt worse than accepted persons, having both more bad feelings and fewer good feelings, but rejected participants did not differ reliably from neutral controls on any specific type of emotion.

At first blush, the pattern of results might seem to fit the affective numbing hypothesis, but there are several reasons not to embrace that conclusion based on these data. First and foremost, affective numbing should seemingly entail significant reductions in both positive and negative emotions. Yet, comparisons between rejected persons and neutral controls did not yield a significant reduction on either dimension. Second, rejected persons reported significantly more negative emotion than the (admittedly negligible) amount reported by accepted persons. Third, these results are based on means aggregating responses of many persons, and it is possible that some people felt palpable distress after rejection even though the mean responses indicated very little emotion of any kind. Fourth, some scholars may balk at taking emotional ratings literally and prefer to emphasize relative differences, in which case they would ignore the evidence of affective neutrality and respect only the finding that rejected persons felt worse overall than accepted ones and neutral controls.

Still, the emotional impact of rejection appears to involve a significant move toward a state of affective neutrality, involving neither much positive nor negative emotion, and consisting of about an equal balance between the positive and negative feelings (or if anything, a bit more positive than negative). That finding seems closer to the numbness hypothesis than to predictions of overt distress. Moreover, the evidence that rejected persons felt worse than neutral controls emerged only from the broadest analyses. These included studies employing imagined rejection experiences, which, as we shall suggest, may yield misleadingly large emotional effects. Hence, the evidence for distress rather than numbness is both sparse and confounded. All in all, these data provide no clear evidence anywhere that laboratory rejection manipulations make people feel genuinely bad. Laboratory rejection mainly seems to eliminate most of the good feeling found in acceptance and neutral control conditions.

Where, then, should theory development proceed? We note that only one article (DeWall & Baumeister, 2006) has articulated the numbness hypothesis and provided prospective tests of it, and that amount of evidence is far too thin to earn respect in a meta-analytic review.



Further work seems warranted to revise that theory based on these findings and provide explicit tests of it. Perhaps, instead of a downward shift in both positive and negative emotion (as the concept of numbing seemingly implies), there is a temporary, general shutdown of emotional processing (leaving states largely the same as neutral controls). This might conceivably be a response to the first inklings of distress (so the state might be slightly worse than neutral controls on some measures). Alternatively, perhaps a new theory can incorporate a novel understanding of emotional dynamics with the impact of rejection, so as to account for these findings.

Several qualifications must be noted. In general, these measures have assessed the immediate reaction to rejection. It is entirely possible that social exclusion would produce delayed reactions involving significant amounts of distress. Emotional distress may be delayed rather than wholly absent. In addition, in laboratory studies, when participants interacted with others, they typically interacted with and were rejected by strangers (e.g., other participants or experimental confederates). Individuals may have a stronger emotional reaction to rejection by a close other than by a stranger (Murray et al., 2006; Tesser et al., 1988).

Outside the laboratory, being socially excluded is correlated with relatively negative emotional states. This is broadly consistent with the laboratory evidence, although the inevitable ambiguity associated with relinquishing laboratory control raises other possible interpretations. It was not possible to assess absolute levels of distress outside the laboratory. Hence, it may be that being rejected in everyday life creates genuine distress in an absolute (rather than merely relative) sense. The nonlaboratory data could also include and indicate delayed emotional distress, consistent with the hypothesis that the initial response to rejection is affectively neutral but that distress comes later. The correlational nature of the nonlaboratory data also permits alternative causal interpretations. Emotional negativity may cause social exclusion, or a third variable (e.g., personal stigma) could cause both negative emotion and exclusion.

One might propose that the lack of emotional distress in experimental studies indicates that rejection by strangers is trivial and meaningless: Perhaps, people only care about rejection by intimate partners. That hypothesis seems contradicted by the large and assorted behavioral effects of rejection, however (e.g., Baumeister, DeWall, Ciarocco, & Twenge, 2005; Bourgeois & Leary, 2001; Chow, Tiedens, & Govan, 2008; Maner, DeWall, Baumeister, & Schaller, 2007; Oaten, Williams, Jones, & Zadro, 2008; Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007; Twenge et al., 2001; Twenge, Catanese, & Baumeister, 2002; Twenge et al., 2003; van

Beest & Williams, 2006; Warburton, Williams, & Cairns, 2006). Our work gathered results from many studies, and in most cases, the emotion data were secondary measures accompanying reports of substantial and significant behavioral changes. Experimental manipulations do have a pronounced effect on participants. Immediate emotional distress is simply not a central part of it. Indeed, when significant differences in emotion have been found, they almost never mediate the behavior anyway.

The most parsimonious integration of the laboratory and nonlaboratory findings would be that being rejected causes a slight shift away from the baseline of positive mood. The immediate reaction may be an affectively neutral state. Some degree of distress may come later, especially with rejection by important groups or partners, but even that may be less than intuitive predictions suggest.

Several significant moderators of the emotional response to rejection emerged, and these deserve comment. Actually being excluded by one or more people, and being rejected in the presence of others, yielded stronger effects than anticipating future rejection, rejection priming, threat of rejection, and other vaguer or more impersonal manipulations. One might suggest that this means simply that real experiences have more emotional power than possible, anticipated, or indirect ones, although other findings (see below) do not fit that interpretation. Exclusion is an interpersonal event, and the salience of other people appears to intensify it. These findings confirm that the underlying motivation is based on concern with others. Alternative theories, such as suggesting that the core concern is with self-concept issues or mortality, have difficulty accounting for these moderator effects.

The largest effects on emotion, however, were obtained in studies that asked participants to imagine rejection, as opposed to actually experiencing it. These findings speak against the view that real experiences have more impact than hypothetical ones. We noted at the outset that most people intuitively expect rejection to cause immediate emotional distress. People tend to overestimate the severity of their emotions when recalling past experiences (Thomas & Diener, 1990), and recalled events are subject to distortion based on assumptions, expectations, and other a priori theories (e.g., Ross, 1989). Imaginary experiences are probably even more susceptible to influence based on such intuitions and expectations than are actual experiences. Regardless, researchers who wish to obtain strong effects on emotional responses may find it more effective to rely on imaginary rather than actual experiences. Meanwhile, though, these data also lend weight to the view that there is value in studying actual behavior and actual reactions, rather than relying on hypothetical or

imaginary scenarios as has become increasingly common in recent years.

Overall, these findings present some challenges to the basic motivational account of the need to belong. If the desire for social connection is a basic, powerful motivation, then one would expect distress when that need is thwarted. Still, these findings do not rule out the possibility that rejection is upsetting. The affective neutrality of rejected persons may be a temporary state or natural coping reaction. This would be consistent with the view that the need to belong is sufficiently important and powerful as to be tied in to the body's mechanisms for reacting to physical pain and injury, so that a shock reaction is elicited by social exclusion.

### *Self-Esteem*

Participants who underwent laboratory manipulations involving social acceptance experienced a significant increase in self-esteem. Perhaps more surprising, laboratory rejection and exclusion manipulations have failed to produce a significant drop in self-esteem that could be detected across the sample of 15 studies. That is, the self-esteem of rejected persons did not differ from that of neutral controls.

Acceptance did cause a significant improvement relative to neutral controls, however. Accepted persons also had higher self-esteem than rejected ones, although again, most of that difference was attributable to the rise in self-esteem from acceptance, insofar as rejection alone did not decrease self-esteem.

The failure of rejection to cause a drop in self-esteem presents a central challenge to sociometer theory. If self-esteem is essentially an inner gauge of social acceptance, then a salient social rejection ought to lower it. One possible explanation would be that self-esteem reflects only generalized expectations of acceptance and rejection rather than actual current status, so that changes in self-esteem will be only loosely related to specific interpersonal outcomes. Against that view, however, acceptance produced an immediate and significant rise in self-esteem, indicating that some current outcomes are powerful enough to produce a change.

Our admittedly speculative interpretation would be that many people have entrenched and effective defenses against losing self-esteem. Interpersonal rejection might therefore represent a threat to self-esteem, but most people are typically able to blunt or dismiss isolated threats and find ways to maintain their self-esteem in the face of an occasional rejection. It is obvious that defenses would not block people from increasing their self-esteem in response to social acceptance, and indeed, many people might welcome a reason to upgrade their self-appraisals. To be sure, this interpretation serves equally well for both

versions of the sociometer theory, namely, that self-esteem registers current status of social acceptance or that self-esteem measures generalized expectations. If anything, the rise in self-esteem may be more plausibly reconciled with the view of self-esteem as a generalized indicator of interpersonal appeal than as a register of specific changes in belongingness status. It is hard to believe that people would consider their social circles to have expanded in some meaningful, lasting manner due to a brief encounter in a laboratory study. More plausible, participants may have regarded the laboratory acceptance as a welcome sign that they were socially appealing persons who were likely to garner acceptance in other, more important and meaningful contexts. Conversely, rejection conveyed the threatening implication that they might be rejected in future settings, but they managed to find reasons to dismiss that interpretation rather than taking it to heart.

To be sure, the present meta-analysis has no direct evidence of defensive responses, and we raise that hypothesis only to help explain the counterintuitive absence of drops in self-esteem among rejected persons. Given that we were led to somewhat similar speculations by the absence of emotional distress in response to rejection, it seems appropriate to highlight these as a priority for further research. That is, further study of possible intrapsychic defensive responses to interpersonal rejection is called for, insofar as it may shed light on the fact that rejection largely fails to produce an immediate decrease in self-esteem or increase in distress.

The moderator analyses lend further support to the idea that the effect of rejection on self-esteem involves a possible reappraisal of generalized expectancies, subject to defensive and other motivated processes. The largest self-esteem differences among the various types of manipulations were produced by having participants relive past rejection experiences. Presumably, most participants would choose from memory an important, impactful, and meaningful experience (and one that could not be dismissed), and such a rejection might well have produced a change in self-esteem (or at least been associated with such a change). Moreover, if drops in self-esteem occur only in a delayed manner, after the person initially defends against any change and then gradually considers the implications and incorporates these into the self-concept, then changes in self-esteem would be apparent in recall of long-ago events but not discernible in studies that measure immediate reactions—which is precisely the pattern these data suggest.

Direct experience of rejection, such as by ostracism and face-to-face rejection procedures, yielded bigger effects on self-esteem than relatively indirect or implied rejection experiences, including anticipated aloneness, rejection priming, and mere threat of possible rejection. These differences attest to a greater effect of direct,

salient experiences than other sorts. They are also consistent with the hypothesis that defensive processes often ward off threats to self-esteem: More direct and salient rejections are more difficult to defend against than are indirect and implied ones.

To be sure, the moderator analyses with self-esteem are less conclusive overall than the ones with emotion and affect. There was no general effect of rejection compared to neutral controls, so the moderator analyses simply focused on comparisons of moderators against all other conditions combined. Acceptance did yield higher self-esteem levels than neutral control conditions, but our search for moderators of the effects of acceptance manipulations found no significant effects.

The combined data likewise present a challenge to terror management theories about self-esteem. As noted in the introduction, if self-esteem is a response to threat of death, and social exclusion constitutes a form of reminder of mortality, then self-esteem ought to have risen in the rejection conditions. There was no sign of increase. Insofar as explaining self-esteem is a peripheral aspect of terror management theorizing, however, these findings do not seriously compromise the core of the theory itself.

The evidence from nonlaboratory studies is consistent with the sociometer model and the refinements we have suggested. Chronic social rejection is linked to low self-esteem. As with affect, the ambiguities inherent in these correlational findings leave open the possibility of multiple causal processes, including the possibility that low self-esteem elicits rejection and that third variables could produce both low self-esteem and rejection. Still, the most parsimonious integration of laboratory and nonlaboratory findings is that acceptance causes a rise in self-esteem relative to rejection. Defenses may block single experiences of rejection from reducing self-esteem, but repeated or chronic experiences may be more difficult to defend against, so it is possible (although not proven) that an accumulation of rejection experiences will lead to a drop in self-esteem.

#### *Further Implications for Theory*

Several other implications deserve mention. The general principle that bad events have a stronger effect than good ones (Baumeister et al., 2001; Rozin & Royzman, 2001) would hold that rejection should generally produce bigger effects than acceptance, especially if both are compared to a neutral control condition. The emotion data fit this pattern, in that rejection produced larger changes in emotion than did acceptance. However, the self-esteem data yielded the opposite pattern, in which acceptance raised self-esteem but rejection had no effect. The self-esteem data may thus constitute a (rare) exception to that general pattern. Then again, we have

suggested that defensive processes may have muted the effect of rejection on self-esteem, at least temporarily, and if this is correct, then one does not have to argue that we have found a case in which good is stronger than bad. It is clear that rejection does not have generally weaker effects than acceptance overall, as indicated by the emotion findings. Hence, the tentative conclusion is that many people respond defensively to rejection experiences (e.g., Taylor, 1991).

Another issue was whether ostracism should be considered a pure rejection manipulation or, instead, should be treated as a special case, based on Williams's (e.g., 2001) theory that ostracism thwarts multiple motivations, including the desires for control and for a meaningful life. For example, if ostracism had produced more and clearer negative emotion (e.g., frustration) than other rejection manipulations, the difference might plausibly have been chalked up to the thwarting of control in ostracism. These data have generally failed to make a case for the view that ostracism is a special, exceptional phenomenon that differs from other manipulations of social exclusion. By and large, the findings from ostracism resembled other forms of rejection. However, it may be that self-esteem and emotion are not the best DVs for discovering the special, unique effect of ostracism. Further work may continue to be alert to the possibility that ostracism differs from other rejection manipulations. For the present, however, it seems reasonable to continue to treat ostracism as similar to them.

#### *Directions and Implications for Further Research.*

Although the weight of evidence from these analyses has yielded several clear conclusions, some questions remain for further research. The absence of clear emotional distress following rejection appears to be well established and consistent across laboratories and methods, but the possibility of delayed reactions should be explored in future studies. Likewise, the possibility of delayed effects on self-esteem may be worth exploring. The suggestion that defensive processes enable people to survive single experiences of rejection without losing self-esteem calls for further investigation, including the type of defensive process and any factors that may moderate its success.

Various findings pointed to differences between actual, direct experience and other methods, including imaginary, hypothetical, anticipated, and relived experiences. Moreover, our results were somewhat hampered by the fact that many Method sections did not reveal precisely whether current or recalled emotions were being measured (e.g., how did you feel when you were excluded?). We recommend that future researchers become much more attentive to and explicit about whether they administer and measure current, actual states or states that require recall, foresight, and

intuitive imagination. The discrepancies between real experiences and imaginary ones suggest that researchers may often benefit by eschewing actual behavior and online real reactions in favor of other procedures, but the discrepancy is all the more reason for the field to pay extra attention to studies that use actual behavior and reports of current emotional state. Imaginary or recalled experiences are important to study, but they are apparently no substitute for actual ones.

All studies showed variance in responses to rejection, suggesting that meaningful variation may be explored by studies of individual differences. Differences in trait self-esteem and rejection sensitivity may be obvious candidates to explore. This review suggests that differences in emotional and coping style may also shed valuable light on how people respond to exclusion. Affect intensity, social desirability, repressive coping style, and neuroticism seem promising candidates for further study.

Last, we note that our interest, like that of the field, has focused mainly on rejection, whereas our findings with both emotion and self-esteem have suggested that acceptance is not the opposite or mirror image. Further work may gain in precision and theoretical contribution by distinguishing more carefully between the effects of rejection and those of acceptance. For that reason, the inclusion of neutral control conditions is strongly recommended for further work. We had inadequate information to evaluate the possibility of moderators of the boost in self-esteem caused by acceptance, and further work may wish to attend specifically to the quest for such moderators.

### *Concluding Remarks*

As social animals who depend on the group for survival, reproduction, and many other advantages, human beings should seemingly have a strong need to belong and a high sensitivity to possible or actual social exclusion. Consistent with that view, it is now well established that people frequently seek out others, strive to maintain interpersonal relationships, and respond to interpersonal rejection with a variety of strong and sometimes dramatic behavioral reactions. This meta-analytic review has sought to extend that understanding by compiling results on emotion and self-esteem.

A cursory glance at some of these findings might furnish the impression that people are indifferent to social exclusion. In particular, rejected persons reported neutral emotional states and exhibited no drop in self-esteem relative to neutral controls. Against such an interpretation, however, other signs indicate that people are in fact quite sensitive to actual or threatened changes in belongingness. They did have emotional reactions, albeit in the form of a shift away from a baseline positive state into a

neutral state, which may well indicate a temporary coping response. They also responded to acceptance with a rise in self-esteem, suggesting that the failure to reduce self-esteem after being rejected was more likely the result of an inner defensive process than an indifference to being rejected. Moreover, of course, the large volume of evidence for behavioral effects of interpersonal rejection likewise indicates that people are far from indifferent to being excluded. In fact, many studies on rejection and ostracism have found behavioral effects exceeding one standard deviation (e.g., Baumeister et al., 2005; Oaten et al., 2008; Twenge et al., 2007; Twenge et al., 2001; Twenge et al., 2002; Twenge et al., 2003; Warburton et al., 2006).

The absence of distress may also seem at first to present a challenge to psychology's understanding of emotion as an online mode of subjective evaluation of outcomes. Still, it is debatable whether a person being threatened with exclusion would be well served by an outburst of emotional distress. Delayed emotion may be useful for prompting retrospective review of experiences to facilitate learning, such as by counterfactual replay (e.g., Roese & Olson, 1996), whereas a period of affective numbness might possibly help the person avoid doing or saying anything that would make things worse.

We said that folk intuition and psychological theory offer ample basis for predicting that rejection should produce immediate and strong distress. The reality, as emerged from these many findings, is rather more complex than that simple hypothesis. Further study of the inner responses to social acceptance and rejection may build on these conclusions to shed further light on some of the most profound mysteries of the human heart.

### NOTES

1. Before calculating the composite effect sizes when positive affect and negative affect were reported, we first examined whether the type of affect assessed (e.g., positive or negative affect) was a significant moderator of effect size (e.g., negative affect may produce a larger effect size than positive affect). Because we found that the type of affect assessed was not a significant moderator of effect size for affect, we aggregated positive and negative affect when both were reported within the same study.

2. For studies that manipulated rejection, 42 studies included in the meta-analysis for affect had multiple effect sizes, with a total of 88 dependent effect sizes. Sixty-six of the 88 dependent effects for affect were produced from 31 studies conducted by Baumeister, Twenge, and colleagues. For self-esteem, 14 studies included in the meta-analysis had multiple effect sizes, generating 30 dependent effect sizes. Fourteen of the 30 dependent effect sizes for self-esteem were produced from 6 studies conducted by Baumeister, Twenge, and colleagues. Studies employing anticipated future rejection as the type of rejection manipulation commonly produced multiple effect sizes for affect and self-esteem.

3. Because Fisher's  $z_r$  transformations may be biased upward or overestimate average weighted effect size estimates when a random effects model is employed, we also calculated the average weighted effect sizes for  $r$ . The resulting average weighted effect sizes are quite

similar for  $z_r$  and  $r$ ; for experimentally manipulated rejection and mood,  $r = 0.25$ ,  $Z = 10.00$ ,  $p < .01$ , 95% CI = 0.20, 0.30; for real-world rejection and mood,  $r = 0.27$ ,  $Z = 11.56$ ,  $p < .01$ , 95% CI = 0.23, 0.32; for experimentally manipulated rejection and self-esteem,  $r = 0.27$ ,  $Z = 6.26$ ,  $p < .01$ , 95% CI = 0.18, 0.35; and for real-world rejection and self-esteem,  $r = 0.28$ ,  $Z = 10.64$ ,  $p < .01$ , 95% CI = 0.23, 0.33.

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## Erratum

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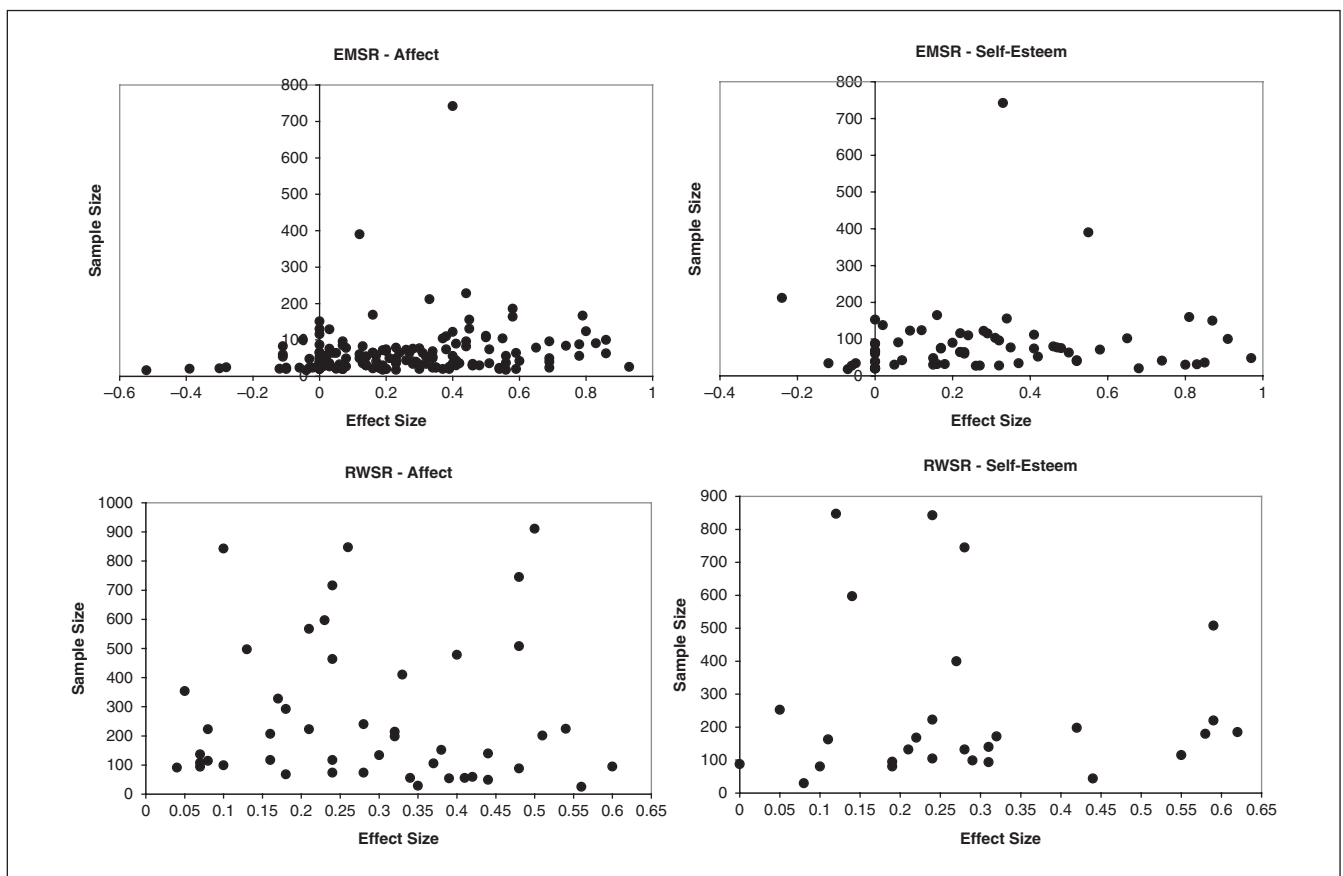
# Erratum



Blackhart, G. C., Knowles, M. L., Nelson, B. C., & Baumeister, R. F. (2009). Rejection elicits emotional reactions but neither causes immediate distress nor lowers self-esteem: A meta-analytic review of 192 studies on social exclusion. *Personality and Social Psychology Review*, 13, 269-309. (Original DOI: 10.1177/1088868309346065)

In the November 2009 (Volume 13, No. 4) issue of *Personality and Social Psychology Review*, an error appears in the article “Rejection Elicits Emotional Reactions but Neither Causes Immediate Distress Nor Lowers Self-Esteem: A Meta-Analytic Review of 192 Studies on Social

Exclusion,” by Ginette C. Blackheart, Megan L. Knowles, Brian C. Nelson, and Roy F. Baumeister. Figure 2 is missing from the top of page 299. This figure shows funnel plots for each meta-analysis conducted and demonstrates that publication biases do not appear to exist.



**Figure 2.** Funnel plots (total sample size by unweighted effect size,  $z_r$ ) for each meta-analysis.  
Note: EMSR = experimentally manipulated social rejection; RWSR = real-world social rejection; SE = self-esteem.