Available online at www.sciencedirect.com
ScienceDirect
Journal of Experimental Social Psychology 42 (2006) 692–697
Journal of Experimental Social Psychology
www.elsevier.com/locate/jesp

How long does it last? The persistence of the effects of ostracism in the socially anxious ☆

Lisa Zadro [a], Catherine Boland [b], Rick Richardson [b,*]

[a] *University of Sydney, Australia*
[b] *University of New South Wales, Australia*

Received 11 July 2004; revised 17 July 2005
Available online 20 December 2005

Abstract

Previous research has demonstrated that ostracism (to be excluded and ignored) leads to detrimental effects on four human needs (belonging, control, self-esteem, and meaningful existence; Williams, 2001). These detrimental effects, however, may be more pronounced, or more prolonged, in particular individuals (see Williams & Zadro, 2001). In the present study, we examined the persistence of the detrimental effects of ostracism in high and low socially anxious participants. The results show that being ostracized affected both groups at the immediate test, and that the high socially anxious participants recovered their primary needs more slowly. The results also show that being ostracized affects personality/attractiveness ratings of sources of ostracism, and increases the likelihood of interpreting ambiguous situations in a threatening manner. Overall, the study illustrates that a comprehensive understanding of ostracism, and the effects of moderating factors such as social anxiety, requires assessing the effects across time rather than only focusing on immediate reactions.

Keywords: Ostracism; Social exclusion; Rejection; Social anxiety

In our day-to-day lives, ostracism (the act of being excluded and ignored; Williams, 2001) exists in many guises, ranging from socially sanctioned forms of ostracism used by institutions (e.g., solitary confinement, exile, and banishment), to more subtle signs of silence and rejection used in interpersonal relationships (e.g., withdrawal of eye contact, no response to greeting; Williams & Zadro, 2001). The response to ostracism can also vary—ranging from increased pro-social behavior (in order to re-connect; Williams, 2001) to increased aggression (e.g., the Columbine shootings; Leary, Kowalski, Smith, & Phillips, 2003). The complexity of ostracism, with its multiplicity of forms and potential effects on *targets* (i.e., those who are ostracized), is captured in Williams (1997, 2001) theoretical model. The core of this model is the assertion that being ostracized poses a threat to four fundamental human needs: belonging, control, self-esteem, and meaningful existence. This assertion has been supported by a series of laboratory studies showing that just 5-min of ostracism, either face-to-face or over the Internet, reduced targets' feelings of belonging, control, self-esteem, and meaningful existence compared to subjects who were socially included (for review, see Williams, 2001).

Although we may all experience a threat to our primary needs after ostracism, there are undoubtedly some individuals who are more sensitive or susceptible to the effects of being excluded and ignored. This sensitivity to ostracism may manifest in two ways. First, these individuals may have a reduced threshold to all forms of ostracism—that is, they may perceive rejection and exclusion to be present in social situations, even if these situations are in fact benign (see

☆ This research was conducted in partial fulfilment of the second author's M.A. (Clinical) degree. We thank Kip Williams for his helpful and insightful comments on this project, and Bill von Hippel and Karen Gonsalkorale for their statistical help and advice. Finally, we thank Steven Spencer and two anonymous reviewers for their insightful comments and suggestions.
* Corresponding author. Fax: +61 2 9385 3641.
E-mail addresses: lisaz@psych.usyd.edu.au (L. Zadro), r.richardson@unsw.edu.au (R. Richardson).

0022-1031/$ - see front matter © 2005 Elsevier Inc. All rights reserved.
doi:10.1016/j.jesp.2005.10.007

Downey & Romero-Canyas, 2005). Second, for these individuals, the effects of ostracism may be more persistent, that is, the effects of ostracism on their primary needs may continue over a longer period of time than those who are less sensitive or susceptible to the effects of ostracism.

One particular group that may be a candidate for such pronounced or prolonged effects of ostracism are the socially anxious. Social anxiety is directly related to a fear of social rejection (of which ostracism is a form). Clark and Wells's (1995) cognitive model of social phobia implicates the fear of negative evaluation and (negative) self-focused attention as its core components. This model suggests that socially anxious individuals typically encode more threatening cues during social interactions, and hence are likely to interpret mild or ambiguous forms of exclusion as threatening. Thus, the impact of ostracism may be larger in socially anxious people than in non-anxious individuals. Additionally, the Clark and Wells model asserts that post-event processing may exacerbate social anxiety because socially anxious people are liable to ruminate about their performance during social interactions. In the context of ostracism therefore, socially anxious participants would be more likely to conduct a post-mortem of the event and ruminate about their role in causing the ostracism than non-anxious participants. This would then lead to the effects of ostracism persisting in socially anxious participants.

Despite the relation between ostracism and social anxiety, the role of social anxiety as a moderator of the effects of ostracism has not been examined to date. Thus, in the present study we examined whether social anxiety moderated the effects of ostracism on primary needs. Unlike previous studies that have investigated the moderating effect of individual differences on the effect of ostracism (see Williams & Zadro, 2005), the present study examined the moderating influence of social anxiety not only on the *immediate* effects of ostracism (on the primary needs), but also on the *delayed* effects of ostracism (i.e., after 45-min). By introducing a delay, it was possible to assess the persistence of the effects of ostracism. In addition to the four primary needs, the present study also examined the moderating influence of social anxiety on several constructs that may be adversely affected by ostracism, specifically, social perception (i.e., judgments of the personality and physical attractiveness of sources of ostracism; see Williams et al., 2002), cognitive processes (i.e., memory for faces), and interpretation of ambiguous situations (that may be perceived as socially or physically threatening).

Methods

Participants

Four hundred and thirty-eight students enrolled in first-year psychology at the University of New South Wales were administered The Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969) in a prior testing session. From this pool, 56 students (age range from 17 to 59, $M = 22.1$, $SD = 8.0$) agreed to participate in the present project in return for course credit, and were randomly assigned to either the inclusion or ostracism condition.

Procedure

Participants arrived at the laboratory and were seated in front of a computer. The experimenter explained that the study was a collaborative venture between three local universities and was designed to examine the effects of mental visualization. Participants were informed that to practice their visualization skills, they would be playing an Internet game—"Cyberball" (see Williams, Cheung, & Choi, 2000)—with students from the other two universities (these students were actually computer generated). The participant was told to mentally visualize (as vividly as possible) throughout the game, and that after finishing the game, their performance on a number of tasks, such as memory tests and questionnaires, would be assessed to determine if mental visualization had an effect. Shortly after obtaining consent, the experimenter received a staged phone call informing them that the other players were ready to start; the game then began.

The game began with one of the players throwing the ball to the participant. The participant was then required to indicate to whom they would like to throw the ball to by clicking on the appropriate player icon. In the ostracism condition, the participant received the ball twice and then was completely excluded from the game (i.e., they did not receive the ball ever again). In the inclusion condition, the participant randomly received the ball approximately 33% of the time. In both conditions, the game lasted 30 trials (approximately 5 min).

Dependent measures

Ostracism measures

After finishing the game, participants completed a standard post-experimental questionnaire that has been used in previous cyberostracism research (see Williams et al., 2002). The questionnaire consisted of 12 items assessing the effect of the Cyberball game on: Belonging (e.g., "I felt like an outsider"), Self-Esteem (e.g., "I felt good about myself"), Control (e.g., "I felt like I had control over the course of the interaction"), and Meaningful Existence (e.g., "I felt non-existent"). Participants were asked to answer the questions according to how they felt "while playing the game" (rated on a 5-point scale, with 1 = not at all and 5 = very much).

There were three manipulation checks to confirm participants' perception of their inclusionary status (i.e., "I was ignored," and "I was excluded," both answered on the same 5-point scale described above, and an open question: "Assuming that 33% of the time you would receive the ball if everyone received it equally, what percent of the throws did you receive?").

The participants completed the ostracism questionnaire a second time about 45 min after the initial game of Cyberball (but without the manipulation check and personality

items—see below). The participants were asked to answer the questions on this second test according to how they felt "right now."

Social perception measures: Personality and attractiveness ratings

Previous research has demonstrated that being ostracized may negatively affect ones' perception of the source(s) of ostracism (Williams et al., 2002). Thus, the post-experimental questionnaire also contained items asking participants to rate the other two players in terms of nine personality traits (friendly, helpful, boring, dishonest, caring, selfish, creative, insensitive, and sincere) and physical attractiveness (all items scored on a 6-point scale).

Visual memory test

After completing the post-study questionnaire, participants were given two memory tests, both involving memory for faces (from a set of 48 faces). The Wechsler Memory Test III (Wechsler, 1997) was used here. The Faces 1 test (with 24 target faces and 24 distractors) was administered immediately after the participant viewed the whole set and the Faces 2 test (24 previously viewed target faces and 24 distractors) was administered after a delay of about 20 min.

Social anxiety measures

After the Faces 1 test, the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989), a clinical measure of social phobia, was administered to confirm the anxiety scores that had been obtained in the FNE 3–4 weeks earlier.

Threat perception measures

After completing the SPAI, participants were asked to identify the most likely explanation (out of three—two neutral and one threatening) of various ambiguous situations. The ambiguous situations were based on those used in previous studies of social phobia and memory biases in children (Barrett, Rapee, Dadds, & Ryan, 1996; Butler & Mathews, 1983), but the details were modified to be more age appropriate. There were 12 ambiguous situations, 6 primarily social (e.g., "Your good friend says she will give you a call over the weekend to make plans to go to the movies the following week. It is Sunday night and she still hasn't called") and 6 primarily physical (e.g., "It is night time and you are awoken by a loud noise in the other room"). Although theoretical models imply that socially anxious individuals should be particularly attuned to socially threatening stimuli, research suggests that their threat sensitivity is more general, encompassing both socially and physically threatening cues (e.g., Mathews & MacLeod, 1985; Vassilopoulos, 2005).

After completing the threat perception task, the participants completed the ostracism questionnaire for the second time, and were then thoroughly debriefed and thanked for taking part in the study.

Results

Social anxiety measures

There was a strong positive, and statistically significant, correlation between the FNE and the SPAI ($r = .83$, $p < .01$). Regression analysis revealed that scores on the FNE or SPAI were not predictive of inclusionary status (i.e., anxiety scores did not predict whether participants were assigned to either the inclusion or ostracism condition), $ps > .73$.

Manipulation checks

Participants correctly perceived whether they were ostracized or included in the game. That is, ostracized participants reported feeling more ignored, more excluded, and that they had received fewer ball tosses than included participants (smallest F was for % throws received, $F(1, 52) = 92.32$, $p = <.001$).

The effects of ostracism on the fundamental needs

Analytic strategy

Unless otherwise stated, the results (of all dependent variables) were examined using a regression analysis in which the predictors were social anxiety as assessed by the FNE (centered), inclusionary status (Ostracism = 1, Inclusion = −1), and the interaction between the two.

Prior to analysis, the items assessing the needs at each time point (i.e., immediately and after the 45 min delay) were reverse scored where necessary. The internal consistency of the need items both immediately after the game and after the delay was reasonably high (Cronbach's $\alpha = .91$ and .79, respectively), and therefore the items were combined to create an overall score for each participant at both time points (a method that has been used in previous ostracism research, see Williams et al., 2000). Lower feelings of control, self-esteem, belongingness, and meaningful existence result in lower overall need scores. The overall need scores for each participant, at each time point (Time 1—immediately after ostracism; and Time 2—after a 45-min delay), were used as the dependent measure for all subsequent regression analyses (unless otherwise stated).

The immediate effects of ostracism—the influence of social anxiety

A regression analysis was conducted on the overall need scores immediately after ostracism. Both inclusionary status and anxiety significantly predicted overall need scores at Time 1. Specifically, ostracized participants had lower overall need scores (and thus higher need-threat) immediately following Cyberball than included participants, $b = -11.29$, $p < .0005$. Moreover, highly anxious participants had lower overall need scores (and thus higher need threat) immediately after Cyberball than did the low anxious participants, $b = -1.88$, $p = .018$. As in previous research assessing other potential moderators of ostracism

(e.g., Zadro, Williams, & Richardson, 2004) the interaction between inclusionary status and the putative moderator (i.e., social anxiety) was not significant, $b = -1.37$, $p = .075$.

The delayed effects of ostracism—the influence of social anxiety and time

To assess whether social anxiety and time had any influence on participants' primary needs 45-min after Cyberball, a regression analysis was conducted on the delayed overall need scores at Time 2, holding the overall need scores at Time 1 constant. Unlike Time 1, there was no significant effect of inclusionary status, $b = 1.69$, $p = .284$. There was, however, a significant effect for anxiety, $b = -3.19$, $p < .0005$, such that participants high in social anxiety reported lower overall need scores (and thus higher need-threat) than low anxiety participants. The interaction between anxiety and inclusionary status was also significant, $b = -1.97$, $p = .005$. That is, for ostracized participants, those who were high in social anxiety reported significantly lower need scores (and thus higher need-threat) 45-min after Cyberball than those low in social anxiety, $b = -5.48$, $p < .0005$, whereas for included participants, the difference between the high and low socially anxious participants was not significant $b = -1.41$, $p > .05$.

Social perception

Personality ratings

Participants rated each of the other players on nine personality traits (see Williams et al., 2002). After reverse scoring where appropriate, a total evaluative rating was obtained by summing the scores on the nine adjectives for each player (range of 6–54, with a high score indicating a positive evaluation). The correlation between the totals for the two other players ($r = .88$, $p < .01$) suggested that participants viewed the other players in generally the same way; hence a single index was calculated by averaging the ratings for the two players (as was also done by Williams et al., 2002). A regression analysis revealed a significant effect of inclusionary status, $b = -5.67$, $p < .0005$, such that ostracized participants rated the personalities of the other two players more negatively than did the included participants. There was no effect of anxiety, $b = .294$, $p = .699$, but the interaction between anxiety and inclusionary status was significant, $b = 1.596$, $p = .033$. The source if this interaction is unclear as follow-up analyses revealed that there was no significant difference between high and low socially anxious participants in the ostracism or included condition, $ps > .093$.

Attractiveness ratings

Participants also rated the attractiveness of the other players using a 6-point scale. As with the personality ratings, a correlational analysis indicated that participants viewed the attractiveness of both players the same way in general ($r = .73$, $p < .01$). Therefore, an average attractiveness rating was used in the analysis. A regression analysis revealed that there was a significant effect of inclusionary status on participants' ratings of the other players' attractiveness, $b = -.629$, $p < .0005$, with ostracized participants rating the other players as being less attractive than did the included participants. Neither anxiety nor the interaction were significantly predictive of attractiveness scores, $ps > .303$.

Visual memory

The regression analyses yielded no significant effects for inclusionary status, anxiety, or interactions, for either immediate or delayed visual memory, $ps > .394$.

Threat interpretations of ambiguous situations

A post hoc reliability analysis of the ambiguous situations indicated that one of the test items was not a reliable predictor, as it correlated negatively with the other items, and was thus removed. In view of the fact that research has demonstrated that social anxiety leads to generalized threat-perception (i.e., both physical and social threat rather than only social threat), a total threat score was calculated (a method that was also used by Barrett et al., 1996).[1] Total threat scores ranged from 0 to 11. A regression analysis showed that there was a significant effect of inclusionary status, $b = .615$, $p = .036$, with ostracized subjects reporting significantly more threat interpretations than included participants. There was also a significant effect of anxiety on this measure, $b = .884$, $p = .003$, with high anxious participants reporting significantly higher threat interpretations than low anxious participants. The interaction between anxiety and inclusionary status was not significant, $b = .287$, $p = .326$. Interestingly, threat scores correlated highly with Time 2 need scores ($r = -.44$, $p < .01$), suggesting that higher need-threat is associated with threat interpretation, thus providing some evidence that a biased cognitive style is linked to the persistence of the aversive effects of ostracism.

Discussion

It has been suggested that the potentially debilitating costs of being excluded or ignored have lead humans to become extremely sensitive to all forms of ostracism, to the

[1] When social and physical threat situations were analyzed separately, there was a significant effect of social anxiety for both social ($b = .473$, $p = .006$) and physical ($b = .366$, $p = .031$) situations, such that high socially anxious participants interpreted socially and physically ambiguous situations as more threatening than low socially anxious participants. This finding—that socially anxious participants perceive greater physical and social threat (and not just social threat)—has received considerable support in the social anxiety literature (e.g., Mathews & MacLeod, 1985; Vassilopoulos, 2005). There was only a single significant effect for inclusionary status—ostracized participants reported physically ambiguous situations as more threatening than included participants, $b = .332$, $p = .048$. No interactions were significant, $ps > .115$.

point where our responses to acts of exclusion may in fact be automatic (e.g., Eisenberger, Lieberman, & Williams, 2003; Zadro et al., 2004). The results of the present study confirm that being ostracized, even by strangers playing a ball-toss game on the Internet, is a powerful experience, resulting in a number of negative reactions. First, the present study replicated past findings that a brief, laboratory-based ostracism experience adversely affects participants' primary needs (for review, see Williams, 2001). Moreover, the experience of being ostracized also colors ones' perceptions of the sources of ostracism, with ostracized participants rating the ostracizing players less positively, both in terms of personality and attractiveness. These results replicate, and extend, recent findings reported by Williams et al. (2002). The present study also shows that ostracized participants are more likely to interpret ambiguous situations in a threatening way. This novel finding suggests that being ostracized may bias how ensuing ambiguous situations are interpreted. In other words, being ostracized may cause the target to interpret subsequent ambiguous situations (both social and physical) in a threatening manner. This may then make recovery from the effects of ostracism quite difficult. That is, someone who has been ostracized may perceive the world in a more threatening way—an effect that can very quickly escalate into a vicious cycle that magnifies the negative impact of an unpleasant social experience.

From the present study, it is apparent that ostracism may have deleterious consequences—but are these effects more pronounced in some individuals, specifically, those high in social anxiety? When we examined the immediate effect of ostracism, social anxiety failed to moderate the impact of ostracism on the primary needs. This finding is in agreement with recent empirical studies that have examined other potential moderators, (e.g., self-esteem, Williams et al., 2000; attributions for ostracism and the identity of the source, Zadro et al., 2004). Such findings have led to the suggestion that the potential costs of being excluded or ignored are so great that our response to any act of exclusion may be automatic and thus not much affected by other variables (e.g., Zadro et al., 2004). However, social anxiety did affect the *persistence* of the aversive effects of ostracism. That is, highly anxious participants recovered from the effects of the ostracism experience more slowly than did the non-anxious participants. In other words, the adverse effects of being ostracized persisted longer in the socially anxious. These findings can be interpreted in terms of current theoretical models of social phobia (e.g., Clark & Wells, 1995) which propose that socially anxious individuals are more likely to ruminate about negative social encounters. Although rumination was not directly examined, there was indirect evidence for this maladaptive cognitive strategy. Specifically, the current study replicated previous findings that individuals high in social anxiety are characterized by an attentional bias toward perceived generalized (i.e., social and physical) threat (e.g., Mathews & MacLeod, 1985; Vassilopoulos, 2005). That this threat interpretation was associated with lower rates of recovery of the primary needs suggests some support for the theory that high socially anxious people possess a biased cognitive style—one that maintains the deleterious effects of ostracism and thereby potentially prohibits active coping.

Examining the duration of the effects of ostracism is a novel aspect of the current study. Previous research has focused exclusively on the immediate response to ostracism and has consistently failed to find that moderators influence the impact of ostracism—a finding that is discrepant to real-world instances of ostracism which are clearly impacted by moderating factors such as the identity of the source, the reason for ostracism, and personality traits of both the target and the source (see Williams & Zadro, 2001). Tellingly, it is only when we examined the *duration* of the ostracism effects that the moderating effect of social anxiety could be seen. It is thus possible that previous studies have failed to find evidence of moderators because they all measured the immediate response to ostracism. Perhaps the immediate reactions to ostracism may indeed be automatic and not much affected by other variables. In contrast, particular features of the experience (e.g., who is doing the ostracizing; why they are doing it, etc.), or of the target (i.e., personality traits), may moderate the persistence of these reactions. Future research that aims to examine potential moderators of ostracism should be mindful that moderating factors may impact coping rather than immediate responses.

Our results also suggest that the persistence of the effects of ostracism may vary depending on how it is measured. That is, performance on the ostracism questionnaire suggests that the effects of ostracism had completely dissipated after 45 min for low-anxious participants. However, performance on the ambiguous stories test, given just before the second ostracism questionnaire, indicated that the ostracized participants, whether high or low in anxiety, were still affected (i.e., they selected more threatening interpretations than the included participants). Although it is possible that the effects of ostracism suddenly dissipated at the conclusion of the ambiguous situations test, it is more likely that different reactions to ostracism dissipate at different rates.

Surprisingly, we did not find any effects of ostracism on performance on the memory task, for either the high or low anxious participants. Other researchers have found that social exclusion can impair performance on a memory task (Baumeister, Twenge, & Nuss, 2002). The reason for this apparent difference is not clear, but it could be due to differences in the memory test (i.e., memory for faces vs. memorizing a prose passage), the difficulty/complexity of the memory task, or to the way in which social exclusion was induced (i.e., excluded from a computer game of ball toss vs. being told that they would spend their future devoid of social ties). Future research will be needed to determine when social exclusion leads to a depletion of cognitive resources and when it does not.

Overall, the present study has demonstrated that although the aversive experience of ostracism may be universal, whether or not we recover from the experience (or at least our rate of recovery) is moderated by individual differ-

ences—for instance, social anxiety. Given the deleterious psychological and physiological consequences of prolonged ostracism (or even feelings of prolonged social exclusion and rejection), it is important to identify those who are vulnerable or particularly susceptible to ostracism, with the ultimate goal of developing strategies that may ameliorate the aversive effects of this complex social phenomenon.

References

Barrett, P. M., Rapee, R. M., Dadds, M. M., & Ryan, S. M. (1996). Family enhancement of cognitive style in anxious and aggressive children. *Journal of Abnormal Child Psychology, 24*, 187–203.

Baumeister, R. F., Twenge, J. M., & Nuss, C. K. (2002). Effects of social exclusion on cognitive processes: Anticipated aloneness reduces intelligent thought. *Journal of Personality and Social Psychology, 83*, 817–827.

Butler, G., & Mathews, A. (1983). Cognitive processes in anxiety. *Advances in Behaviour Research and Therapy, 5*, 51–62.

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment and treatment* (pp. 69–93). New York: The Guilford Press.

Downey, G., & Romero-Canyas, R. (2005). Rejection sensitivity as a predictor of affective and behavioral responses to interpersonal stress: A defensive motivational system. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying*. New York: The Psychology Press.

Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science, 302*, 290–292.

Leary, M. R., Kowalski, R. M., Smith, L., & Phillips, S. (2003). Teasing, rejection, and violence: Case studies of the school shootings. *Aggressive Behavior, 29*, 202–214.

Mathews, A., & MacLeod, C. (1985). Selective processing of threat cues in anxiety states. *Behaviour Research and Therapy, 23*, 563–569.

Turner, S. M., Beidel, D. C., Dancu, C. V., & Stanley, M. A. (1989). An empirically derived inventory to measure social fears and anxieties: The social phobia and anxiety inventory. *Psychological Assessment, 1*, 35–40.

Vassilopoulos, S. Ph. (2005). Social anxiety and the vigilance-avoidance pattern of attentional processing. *Behavioral and Cognitive Psychotherapy, 33*, 13–24.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*, 448–457.

Wechsler, D. (1997). Wechsler adult Intelligence scale: Third edition (WAIS-III). San Antonio, TX: Psychological Corporation.

Williams, K. D. (1997). Social ostracism. In R. Kowalski (Ed.), *Aversive interpersonal behaviors* (pp. 133–170). New York: Plenum Publishers.

Williams, K. D. (2001). *Ostracism: The power of silence*. New York: Guilford Press.

Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology, 79*, 748–762.

Williams, K. D., Govan, C. L., Croker, V., Tynan, D., Cruickshank, M., & Lam, A. (2002). Investigations into differences between social and cyberostracism. *Group Dynamics: Theory, Research, and Practice, 6*, 65–77.

Williams, K. D., & Zadro, L. (2001). Ostracism: On being ignored, excluded, and rejected. In M. Leary (Ed.), *Interpersonal rejection* (pp. 21–53). New York: Oxford University Press.

Williams, K. D., & Zadro, L. (2005). Ostracism: The indiscriminate early detection system. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying*. New York: The Psychology Press.

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower mood and self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology, 40*, 560–567.