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Adding Insult to Injury Social Pain Theory and Response to Social Exclusion

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I know it was wrong, but I got hecka suspicious about her and Charles so I went into her e-mail one day and I saw a letter that she sent to Charles... And after I saw that, it was over. I was so fucking mad and so fucking hurt, mostly mad. I wanted to throw EVERYTHING and just punch everything I saw... That night that I found out, I couldn't even sleep. I thought I was just gonna die in bed that night, it was just hella hurting. I was just lying there, and the heartache was hurting so bad, it's unexplainable. It starts from the heart, and it spreads throughout your body so the whole body hurts. The heart, the mind, everything about me was dying. (uclamangoboy, 2003)

The jilted lover is a role most adults have played at one time or another, and so the reactions described above may have a certain familiarity for many readers. From a researcher's point of view, however, such a statement highlights two striking qualities of reactions to rejection. The first is the extremity of the reaction. If romantic break-up is a common experience, then it seems unduly

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harsh to feel something akin to death in response to relationship dissolution. The second is the apparent nonfunctionality of the reactions. If a rejected individual's primary goal is to increase inclusionary status, it seems difficult to understand what wanton aggressiveness, sleeplessness, and full-body pain do to subserve that goal. Although the reasons for the extremity and nonfunctionality of such rejection experiences are not well understood, in this chapter we strive to demonstrate that the motivations behind such reactions are not, in fact, unexplainable. Specifically, we will present evidence, including three studies, that the experience of social exclusion can activate the physiological system that functions to protect individuals from physical threats, thus leading to a cascade of physical defense responses.

In modern life, it is relatively easy to view our social needs as separate from our physical needs. But in the environment that forged human nature, as well as that of our pre-human ancestors, social needs and physical needs were intimately related. Inclusion in social groups meant access to nutrition, security, and mates while exclusion undermined survival not just of an individual but also of its genetic lineage (Baumeister & Leary, 1995). As a result, social animals required mechanisms that could warn of threats to inclusion and guide appropriate action. Social pain theory (MacDonald & Leary, 2005) posits that aspects of the physical pain system provided the foundation for some of the physiological mechanisms that regulate social behavior. Specifically, the experience of pain can be separated into two components—pain sensation and pain affect (Melzack & Casey, 1968; Price, 2000). Pain sensation mechanisms function to detect physical injury through specialized receptors, with tissue damage signaled via the nociceptive system. Pain affect mechanisms function to promote the sense of unpleasantness that often accompanies pain sensation, as well as triggering emotions relating to the possible future consequences of the injury (Price, 2000). It is pain affect mechanisms that connote a sense of aversiveness, draw attention to injury, and provide motivation to end exposure to the noxious stimulus (Melzack & Casey, 1968; Price, 1999). Social pain theory proposes that perceptions of exclusion or relational devaluation lead to the experience of pain affect, but not pain sensation (see also Eisenberger & Lieberman, this volume; Eisenberger, Lieberman, & Williams, 2003).

In particular, social pain has been defined as, “a specific emotional reaction to the perception that one is being excluded from desired relationships, or being devalued by desired relationship partners or groups” (MacDonald & Leary, 2005, p. 202). Exclusion refers to being denied a relationship with an individual or group for any reason, such as rejection, death of a loved one, or forced separation. Relational devaluation refers to feeling less valued as a relational partner (e.g., friend, romantic partner, group member) than one desires (Leary & Springer, 2000). Devaluation is considered to be experienced as aversive because it is a cue related to ultimate exclusion. Leary and Springer (2000) suggest that hurt feelings is the specific emotion felt in response to relational devaluation. However, other affective states such as embarrassment, shame, guilt, or jealousy can also be indicators that one may be disappointing important others, and thus may also accompany hurt feelings.

MacDonald and Leary (2005) argue that painful feelings came to be associated with cues predictive of exclusion experiences because evolutionary pressures made the regulation of inclusionary status critical to survival. Specifically, social pain theory suggests that the pain system provided two important preadaptations to aid in response to exclusion threats—pain promotes quick reaction in response to threat and provides a source of punishment to teach organisms to avoid threatening stimuli. Although these two functions are related, this chapter will focus more exclusively on the former. We will discuss evidence suggesting that shared physiological mechanisms underlie behavioral responses to socially and physically threatening stimuli, and that these mechanisms promote rapid responses to general threats as opposed to tailored responses to specific threats. That is, we will argue that both social and physical pain lead to reactions that prepare an organism for quick reaction to non-specific danger. Such a response facilitates timely reaction to threat, but may, at times, lead to inappropriate and self-defeating reactions to social exclusion.

If response to social exclusion is regulated by the same system that manages response to physical threat, understanding the physical threat response system should provide insight into reactions to exclusion. According to Gray and McNaughton (2000), behavior in response to threat is regulated according to the state of two key variables. The first variable, defensive distance, refers to the degree of perceived threat in a given situation (Blanchard & Blanchard, 1990). Defensive distance should be perceived as relatively high when a stimulus is viewed as having little capacity to inflict harm or when a potentially harmful stimulus is not nearby. Defensive distance should be perceived as relatively low when a stimulus that has the potential to inflict harm is in close proximity. For example, encountering an individual with a gun should promote perceptions of low defensive distance, whereas recognizing the gun as only a toy should promote perceptions of high defensive distance. The second variable, defensive direction, refers to whether or not motivation exists to approach a potentially dangerous stimulus (Gray & McNaughton, 2000). For example, an individual may perceive walking alone at night as being threatening, but may need to do so in order to get home (i.e., approach a threatening situation to reach a desired goal). According to Gray and McNaughton's (2000) model, the emotional response to approaching a potentially threatening stimulus is *anxiety*, which encourages cautious approach behavior (e.g., carefully attending to other pedestrians). Anxiety and cautious approach behavior should be increased as defensive distance (e.g., distance from a stranger) is reduced. When a dangerous stimulus is detected at high levels of defensive distance, and motivation to approach the stimulus exists, the defense system promotes *fearful avoidance* of the stimulus (e.g., avoiding eye contact with strangers walking on the other side of the road). However, threatening stimuli perceived at low defensive distance (e.g., the individual is accosted), leads to a panic response, with accompanying fight, flight, or freezing behavior geared towards finding the quickest possible route to safety. This response has been shown to be reliably elicited by such factors as immediate predators, high levels of carbon dioxide, and physical pain (Gray & McNaughton,

2000). Physical pain often signals highly proximal threat, as it typically associated with ongoing tissue damage. In this way, pain is an important activator of the fight/flight/freezing response (Berkowitz, 1993; Berkowitz, Cochran, & Embree, 1981; Merskey, 2000). Importantly, such fight/flight/freezing behavior is highly reactive and relatively undirected—coordination and planning are bypassed in order to provide a rapid response to danger. To facilitate quick reaction, panic induces a set of physiological changes such as increased heart rate, increased blood clotting factor, and analgesia (Gray & McNaughton, 2000).

Just as the physical world contains rewards and threats that must be negotiated, so too does the social world. While the need to belong (Baumeister & Leary, 1995) and sexual desire provide social approach motivation, the dangers of rejection and exclusion provide social avoidance motivation. Accordingly, the concepts of defensive distance and defensive direction may be useful in understanding social behavior. Defensive distance in a social context may be thought of as a function of one's perceptions of the likelihood of exclusion from a relationship, and the value that inclusion in that relationship holds. That is, impending exclusion from important relationships should promote perceptions of low defensive distance from threat in social situations. In attachment theory terms, defensive distance may be comparable to the dimension of anxious attachment, or the degree to which one fears ultimate exclusion from close others (e.g., Feeney, Noller, & Hanrahan, 1994). Defensive direction may be thought of as the degree to which one is motivated to become emotionally close with others. Again, in terms of attachment, defensive distance may be comparable to the dimension of discomfort with closeness, or the extent to which closeness from others is considered desirable. Consistent with these speculations, hurt feelings appear to promote anxious, fearful, and panic responses consistent with those seen in response to physical threat. For example, Vangelisti and Crumley (1998) factor analyzed responses to hurtful communication into three categories. The first, "acquiescent," consisted of behaviors such as apologizing that appear to facilitate safety from hurt via cautious approach. The second, labeled "invulnerable," consisted of behaviors such as ignoring the source of hurt that serve to help one avoid or withdraw from a hurtful exchange. Finally, the response labeled "active verbal" consisted of behaviors such as verbally attacking the source of hurt that seem to reflect aggressive responses. These classes of responses seem to match well with the anxiety, fear, and panic components of the physical defense system, respectively.

There is a large body of evidence supporting the notion that avoidance responses to social and physical threat are managed by the same physiological system (for a review see MacDonald & Leary, 2005). One line of evidence especially relevant to the current discussion comes from research involving the midbrain periaqueductal gray (PAG). In general, the PAG is considered an important site for the management of autonomic and motor responses to threats (Fanselow, 1991; Gray & McNaughton, 2000; Lonstein & Stern, 1998). Gray and McNaughton (2000) argue that the PAG serves as the coordinator of the panic response, integrating a variety of physiological changes into a relatively coherent response pattern.

Indeed, direct stimulation of the lateral PAG in non-human animals has been shown to instigate panic behaviors such as undirected escape, defensive aggression, and freezing (Bandler & Shipley, 1994; Fanselow, 1991). Natural elicitors of PAG activation appear to include both physical pain and social separation cues. The PAG receives input from the nociceptive system (Craig & Dostrovsky, 1999) and has been shown to play a role in response to physical pain (Fields, 2000). The PAG also receives input from the anterior cingulate cortex (An, Bandler, Öngür, & Price, 1998), which has been shown to be involved in processing the affective component of physical pain (Rainville, 2002), and to be active in response to social exclusion in humans (Eisenberger et al., 2003). The PAG has also been shown to be related to bonding (Lonstein, Simmons, & Stern, 1998; Stack, Balakrishnan, Numan, & Numan, 2002) and infant proximity-seeking behavior (Panksepp, 1998). In fact, Panksepp (1998), based on the physical proximity of PAG areas that can be stimulated to produce separation distress vocalizations and physical pain responses in non-human animals, concluded that, "This affirms that separation distress is related to perceptions of (physical) pain . . ." (p. 267).

As discussed, one reason pain may have been adopted as a signal of threat to social inclusion status is that pain triggers quick reaction to threat. It is fairly evident why quick reaction to physical threat is an adaptive trait. Such reactivity allows for fight, flight, or freezing behavior to occur in the small window of time an organism may have to save itself. Threats to inclusionary status also frequently require similar quick reactions. For example, inappropriate comments that are halted on the first sign of disapproval from others are likely to do less damage to inclusionary status than inappropriate comments that continue despite warning signs of disapproval. In some cases, stopping one word or one action too late can mean the difference between inclusion and exclusion. We suggest that the same base fight/flight/freezing motivation involved in response to physical threat may underlie response to social threat because it promotes adaptive reactions in these circumstances. For example, "social freezing" motivation could promote behaviors such as ceasing inappropriate remarks and increasing vigilance to the social situation. "Social flight" motivation may promote withdrawal from hurtful exchanges, and the pursuit of interaction with safer relational partners. Finally, "social fight" motivation may promote assertiveness when one's inclusionary status is challenged.

However, because the threat response system is designed to prepare an organism for generalized threat, rather than specific classes of social or physical threats, threat to social inclusion status should lead to physiological changes consistent with preparation for a physical threat. Research on the effects of social exclusion supports this suggestion. The experience of exclusion has been shown to lead to increases in plasma cortisol (a marker of stress) and blood pressure (Stroud, Tanofsky-Kraff, Wilfley, & Salovey, 2000), to interfere with higher order cognitive processing while not affecting more base mental tasks (Baumeister & DeWall, this volume; Baumeister, Twenge, & Nuss, 2002), to hinder self-regulation (Baumeister & DeWall, this volume), to automatically prime anger (Williams, Case,

& Govan, 2003), and to promote aggression (Buckley, Winkel, & Leary, 2003; Catanese & Tice, this volume; Twenge, this volume; Twenge, Baumeister, Tice, & Stucke, 2001). Although this constellation of responses to exclusion appears to have little connection to effective social behavior, the set of responses makes more sense when considered as part of the activation of a general threat response system. Specifically, these physiological changes appear designed to prepare an organism for quick reactions to any type of threat that may manifest itself. This analysis suggests that when high degrees of rejection are perceived (i.e., defensive distance is low), a social threat may be treated equivalently to a physical threat. That is, excluded individuals' threat response systems may become so highly active that they react to a source of relational devaluation as if the excluder is a proximate physical threat. This notion may help explain why relationship conflicts often devolve into violence or chronic withdrawal.

More fundamentally, the above analysis suggests that because responses to social and physical threat are processed by similar mechanisms, perceived threats to inclusion should lead to increased sensitivity to and physiological preparation for physical threats. Three recent studies, described below, support this hypothesis. In the first study, we investigated whether concern over social rejection would promote sensitivity to physical threat. In the second study, we investigated whether social exclusion would lead to analgesia, or decreased sensitivity to physical pain. In the third study, we looked for evidence that feelings of pain are a mechanism by which hurt feelings promote cautious and defensive behavior.

STUDY 1: HURT FEELINGS AND REACTION TO DEPICTIONS OF INJURY

If concerns about social exclusion prepare an individual to respond to generalized threat, then greater concern over rejection should be related to higher sensitivity to physical threat. That is, if the threat response system is activated by perceived rejection from others, then rejection concerns should also cause physical safety threats to become more salient and to be taken more seriously. Some existing research supports this notion. Romero-Canyas and Downey (this volume) report a study in which the fear-potentiated startle reaction is amplified in highly rejection sensitive individuals when viewing depictions of rejection. In Study 1, we further tested the notion that social pain sensitivity is related to physical defensiveness by investigating the responses of individuals varying in their proneness to hurt feelings to video clips of physically painful events.

Eighty undergraduate students (60 females and 20 males) were recruited for a study on reactions to video images. The study began with participants completing an initial questionnaire booklet, including a measure of hurt feelings proneness (Leary & Springer, 2000). The last page of the questionnaire package asked participants to describe a recent incident wherein they felt rejected or isolated by an individual close to them. Specifically, they were asked to write about what occurred

and what were their feelings relating to this experience. This item was included so as to prime rejection concerns within the participants, and thus activate the threat response system. Participants then viewed eight video clips featuring images of individuals or groups of individuals experiencing varying degrees of pain. Two of the clips involved negligible pain to individuals, for example, an ice hockey player scoring a goal. The remaining six clips involved pain ranging from low to moderately high levels, for example an American football player being shown in an obvious amount of pain, following a strong hit. The incidents featured within the clips were spontaneous rather than staged events, and were chosen so as to be relatively novel to the participants within this study. Following the presentation of each individual clip, participants completed our two dependent measures. The first consisted of 4 items measuring how aversive participants found the clips, for example, “How much discomfort did you feel when watching this incident?” The second was a single item asking participants, “How funny did you find this incident?” We reasoned that if participants were more sensitive to physical threat, they should perceive less defensive distance from the painful images and thus report the clips to be more aversive and less humorous. In short, participants more sensitive to threat should take the painful clips more seriously. Thus, we hypothesized that those more prone to hurt feelings would report the painful images to be more aversive and less humorous than those less prone to hurt feelings.

The data were analyzed by regressing hurt feelings on to the aversiveness and humor ratings for the pain clips after the variance accounted for by the ratings of the non-pain clips had been partialled out. This method was chosen so that participants acted as their own controls. As predicted, after controlling for ratings of the non-pain clips, individuals higher in proneness to hurt feelings reported the painful images to be both more aversive and less humorous. We interpret these results as suggesting that individuals highly prone to hurt feelings are more sensitive to physical threat than those less prone to hurt feelings. That is, hurt prone individuals appeared to have especially strong avoidance reactions to depictions of physically threatening stimuli, suggesting a reduced perception of defensive distance from physical threat. Thus, the data suggest that individuals more sensitive to rejection are also more sensitive to the presence of physically threatening stimuli.

STUDY 2: PAIN SENSITIVITY FOLLOWING REJECTION

As discussed earlier, one physiological change stimulated by the threat response system is analgesia, or decreased pain sensitivity. Analgesia aids in fight, flight, and freezing behavior by allowing an organism to ignore physical injury until its safety is secured. There is also evidence that social threat can lead to analgesia, as decreases in pain sensitivity have been shown to occur in non-human animals as a result of social isolation. Such reduced pain sensitivity in response to isolation has been demonstrated in rat pups (Kehoe & Blass, 1986), adult rats (Schwandt, 1993), mice (Konecka & Sroczyńska, 1990), cows (Rushen, Boissy, Terlouw, &

de Passillé, 1999), and chicks (Sufka & Hughes, 1990). Study 2 was designed to test whether social exclusion could lead to analgesia in humans as well.

Ninety-six people (66 females and 30 males) were recruited for a study on reactions to physical discomfort. Participants began by completing the hurt feelings proneness scale (Leary & Springer, 2000), then were seated at a computer and given instructions that they would play an online ball tossing game with three other participants. In fact, this game was an exclusion manipulation (Williams, Cheung, & Choi, 2000). In the inclusion condition, participants received a ball toss on 10 of the 40 total throws, but in the exclusion condition participants received the ball only twice in 40 throws. Following the exclusion manipulation, participants were asked to place their non-dominant arm in a container filled with water cooled to 1°C for as long as they were able, up to 3 minutes. For our key dependent measure, participants were asked to indicate the point at which they first felt pain, referred to hereafter as their pain threshold. We predicted that highly hurt prone individuals randomly assigned to experience social exclusion would demonstrate higher pain thresholds, or decreased sensitivity to physical pain. That is, we predicted that social exclusion would prime the threat system especially strongly in those who perceive low defensive distance from rejection, and thus prepare them more strongly for fight/flight/freezing responses. Consistent with our hypothesis, participants high in hurt feelings proneness evidenced a higher pain threshold (i.e., less pain sensitivity) in the exclusion than the inclusion condition.

The results of Study 2 are strongly supportive of the notion that social exclusion triggers a general threat response system that prepares an individual for physical and social threats alike. Highly hurt prone individuals who were randomly assigned to experience exclusion evidenced a significant increase in pain threshold during the cold pressor task relative to those assigned to the inclusion condition. Thus, similar to many non-human animals, highly hurt prone people appeared to demonstrate analgesia in response to social threat. Interestingly, this effect was not significant for individuals less prone to hurt feelings. This suggests that individuals low in hurt feelings proneness experienced less threat, or higher defensive distance, when excluded. That is, exclusion appears to be more threatening for individuals with higher levels of hurt proneness, and thus triggers the threat response system more strongly.

STUDY 3: PERSISTENT PAIN AND HURT FEELINGS

If pain serves as a warning signal of both physical injury and social exclusion, then individuals experiencing higher levels of physical pain should also report higher levels of social pain. Further, not only should both types of pain be related to higher levels of caution and defensiveness, but feelings of pain should be one mechanism by which sensitivity to rejection leads to such caution and defensiveness. In Study 3, we tested these ideas by surveying both persistent (i.e., chronic) pain patients and community members in order to test the degree to which reports of physical

pain were related to hurt feelings proneness. In addition, we used mediational analyses to test whether reports of physical pain were a mechanism by which hurt feelings led to increased caution and defensiveness.

Sixty-four participants (34 females, 29 males, 1 gender not listed) were recruited from a multidisciplinary pain center located at the Royal Brisbane and Women's Hospital (Australia). Potential participants from the pain center were recruited either prior to a regular group information session, or through a mailing to patients who had received treatment during the preceding 6-month period. A community sample of 92 respondents (48 females and 44 males) was recruited from a shopping center resulting in a total of 156 participants. Participants completed measures of hurt feelings, current pain, anger, depression, anxiety, and stress. These final three measures were highly correlated, and so were combined into an index of general defensiveness.

Initial analyses indicated significant differences in age and education between the pain center and community samples, thus analyses were conducted controlling for these variables. Via regression analysis, reports of physical pain were found to relate significantly to hurt feelings proneness. This suggests that feelings of pain are, in fact, related to the tendency to feel emotionally hurt. Further, both physical pain and hurt feelings related significantly to anger and general defensiveness. These data provide support for the notion that both physical pain and social pain are functionally related as defenses against harm. Finally, mediational analyses revealed that reports of physical pain were a significant partial mediator of the relation between hurt feelings and anger, as well as the relation between hurt feelings and general defensiveness. This suggests that feelings of pain are one mechanism by which hurt feelings lead to increases in anger and defensiveness. That is, this supports the suggestion that it is a sense of pain that promotes caution in response to perceived rejection.

SUMMARY AND CONCLUSIONS

The three studies reported here are supportive of social pain theory. Specifically, the results provide evidence that responses to social and physical threat share common mechanisms, with social threat resulting in increased sensitivity to and physiological preparation for physical threat. In Study 1, participants more prone to hurt feelings were particularly averse to depictions of physical pain and found these depictions relatively humorless, suggesting a decrease in perceived defensive distance from physically threatening stimuli. In Study 2, highly hurt prone individuals displayed decreased pain sensitivity following social exclusion, suggesting strongly that social threat led to the priming of more generalized threat-response mechanisms. These data suggest that we can add increased sensitivity to physical threat and analgesia to the previously reported increases in cortisol, blood pressure, anger, aggressiveness, reliance on less complex cognitive processing, and diminished self-regulation capacity as physical threat defenses shown to be spurred by social exclusion (Buckley

et al., 2003; Baumeister & DeWall, this volume; Baumeister et al., 2002; Stroud et al., 1998; Twenge, this volume; Twenge et al., 2001; Williams et al., in press). Further, Study 3 demonstrated a link between reports of physical pain and hurt feelings, and showed that pain appears to be one mechanism by which perceived rejection promotes increased caution and defensiveness. Together, these findings support the notion that social exclusion leads to physiological preparation for quick action in response to non-specific danger.

The pain sensitivity results in particular may have important consequences for behavior in response to social exclusion. Social pain theory suggests that the affective component of pain serves as a signal to help regulate social behavior. Behavior that threatens inclusiveness should lead to painful feelings, thus encouraging the individual to alter that behavior. However, if rejection sensitive individuals experience analgesia in response to exclusion, then the warning signal that pain provides may not be as prominent during exclusion episodes. Thus, highly rejection sensitive individuals may not experience the same restraints on anti-social behavior following exclusion as less rejection sensitive individuals. For example, higher levels of rejection sensitivity have been related to higher rates of abuse in romantic relationships (Dutton, 2002; Holtzworth-Munroe, Bates, Smutzler, & Sandin, 1997). If rejection sensitive individuals are less sensitive to social pain as a result of perceived exclusion, this may contribute to abusive tendencies by making the abusive behavior feel less inclusion-threatening to the attacker. More generally, the degree of analgesia experienced in response to exclusion threat may play an important role in guiding an individual toward either pro- or anti-social behavior. Of course, in pursuing this hypothesis it will be important to investigate whether exclusion-related analgesia functions via the dulling of pain affect, pain sensation, or both.

The finding that exclusion by unknown others during a meaningless game can lead to decreased pain sensitivity for hurt prone individuals argues strongly that exclusion is treated as a very serious threat. Consistent with this notion are the findings by Williams and colleagues (Williams & Zadro, this volume) showing that even ostracism by a computer or by disliked outgroup members can lead to distress. Social pain theory is potentially useful in explaining why rejection appears to lead to social pain even under such minimal conditions. LeDoux (1994) has argued that detection of threat occurs in multiple stages. In the early stages, partially processed information is sent to the defensive system such that basic stimulus features are analyzed for threat potential. This "quick and dirty" analysis allows for the priming of defense mechanisms so preparation for threat response can begin. If subsequent, more complex, processing disconfirms the presence of a threat, defense responses can be down-regulated. This mechanism is especially useful when threatening stimuli are embedded in a complex environment, as response can begin before the existence of a threat is fully confirmed. It seems reasonable to assume that social threat information may be processed in a similar manner. This seems especially likely given that cues to social exclusion are often located within highly complex social environments, such that long delays

between exclusion cues and reactions would be likely unless the defense system was triggered by partially processed information. Such “quick and dirty” social information processing may be focused mainly on detecting the presence of any cues to exclusion, however minimal, with later information processing refining the evaluation of defensive distance from exclusion from important relationships. That is, exclusion even from unimportant sources may initially lead to social pain, with the degree of pain changing over time as more social information is processed. This reasoning suggests that initial reactions to rejection may have different properties than reactions following the passage of time.

In this sense, an argument could be made that the social pain system is miscalibrated, signaling an undue amount of threat and potentiating counterproductive behavior such as aggression against close others. However, it is important to consider that social pain may play its most important role during infancy. During this period, the child is almost totally reliant on its caregivers, and thus separation from important others truly is extremely threatening. Response to separation from caregivers initially involves strong protest, including the expression of anger, which functions to alert the caregiver to the child’s separation distress (Bowlby, 1973). The strong reaction of children separated from caregivers certainly does not seem miscalibrated as the degree of threat and the lack of effective alternative responses necessitates the protest response. However, it is possible that as an individual grows older, this strong perception of threat from social exclusion remains despite the individual’s increasing self-reliance. Thus, social pain may function optimally during the crucial period of childhood, but become somewhat less functional as an individual matures.

A potentially fruitful strategy for future research would involve the examination of whether other consequences of physical pain also result from social exclusion. For example, research has shown that physical pain taxes attentional resources. Specifically, in order to draw attention to threat, pain, “interrupts, distracts, and is difficult to disengage from” (Eccleston & Crombez, 1999, p. 356). Thus, it seems reasonable to suggest that social exclusion may cause attention to be heavily focused on the exclusion episode. For example, Pickett and Gardner (this volume) have shown that both a chronic need to belong and transient rejection experiences appear to increase vigilance for social information. Such a focus of attention on exclusion may have important consequences. Research has shown that increased focus on rejection concerns as a result of experimentally manipulated self-focus, trait self-focus, or alcohol intoxication leads romantic partners to experience feelings of decreased relationship security (MacDonald, Leary, & Boksmann, 2003; MacDonald, Zanna, & Holmes, 2000). Such “rejection-myopia” appears to threaten security by removing attentional focus from information that would mitigate rejection fears such as a partner’s past reassurances of affection. Further, increased focus on rejection concerns has also been tied to an increased risk of partner violence for those low in felt security (MacDonald, Holmes, Zanna, Leary, & Agrawal, 2003). Thus, if perceptions of social exclusion in themselves promote extreme focus on an individual’s insecurities, then such attentional

vigilance may be an important mediator of reactions to exclusion. If true, this analysis suggests that one means for reducing the destructive aspect of response to exclusion may be distraction from the exclusion episode, or intentional focus on security-enhancing information.

In general, we believe that social pain theory can help in understanding reactions to social exclusion by highlighting the notion that such exclusion is processed at a very basic level as a strong survival threat. As a result, the excluded individual becomes physiologically prepared to respond to not just social threat, but to physical threat as well. Although this process is likely often functional, we also believe that there is significant room for error as social and physical threats often require very different response patterns. At the extreme, we believe that social threats may be treated as physical threats, resulting in fight (e.g., partner abuse), flight (e.g., demand/withdraw conflict patterns), and freezing (e.g., shyness) responses to perceived social exclusion. Overall, we believe social pain theory reaffirms the notion that our social and physical needs are deeply interwoven, and helps to explain why, “a sense of separation is a condition that makes being a mammal so painful” (MacLean, 1993, p. 74).

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