The Communal Coping Model of Pain Catastrophising: Clinical and Research Implications

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Abstract
Pain catastrophising has been broadly defined as an exaggerated negative orientation to actual or anticipated pain comprising elements of rumination, magnification, and helplessness. Hundreds of studies have documented associations between pain catastrophising and adverse pain outcomes, including heightened pain intensity, mental health problems, and disability. This article contrasts different conceptual models that have been advanced to explain how pain catastrophising might impact on pain outcomes. It is argued that traditional “intrapersonal” models of pain catastrophising are overly simplistic and lacking in explanatory power. Research is reviewed showing that interpersonal variables and social context are central determinants of the relation between pain catastrophising and pain outcomes. Discussion addresses the clinical implications of research showing that interpersonal factors underlie the relation between pain catastrophising and adverse pain outcomes. Discussion also addresses the implications of research on the interpersonal dimensions of pain catastrophising for theories of the psychology of pain.

Keywords: catastrophizing, pain, disability, depression

Over the past two decades, pain catastrophising has emerged as one of the most robust psychological predictors of pain-related outcomes (Edwards, Bingham, Bathon, & Haythornthwaite, 2006; Sullivan et al., 2001; Turk, Meichenbaum, & Genest, 1983; Weissman-Fogel, Sprecher, & Pud, 2008). Hundreds of studies have documented associations between pain catastrophising and adverse pain outcomes, including heightened pain intensity, mental health problems, and disability (Edwards et al., 2006; Keefe, Rumble, Scipio, Giardano, & Perri, 2004; Sullivan et al., 2001; Turk & Okifuji, 2002).

Increasingly, researchers have turned their attention to questions concerning the processes by which pain catastrophising impacts on pain outcomes (Seminowicz & Davis, 2006; Sullivan, 2008; Turner & Aaron, 2001). Research in this area has identified psychological, interpersonal (Cano, 2004), physiological (Wolff et al., 2008), and neuroanatomical (Gracely et al., 2004) correlates of pain catastrophising that might explain how pain catastrophising impacts on pain experience. The identification of the mechanisms that link pain catastrophising to pain outcomes has both clinical and theoretical implications. From a clinical perspective, understanding the processes by which pain catastrophising influences the experience or expression of pain might point to new avenues for intervention that could reduce the suffering and burden of persistent pain conditions. From a theoretical perspective, understanding how pain catastrophising influences pain outcomes might contribute to the elaboration or refinement of conceptual frameworks that address the linkages between psychology and physiology in the generation of pain experience.

This article focuses on research that has addressed the interpersonal processes involved in the relation between pain catastrophising and pain outcomes. Given the volume of research that has been conducted in this area, the research reviewed in this article is intended to be illustrative as opposed to exhaustive. The article ends with a discussion of the clinical and theoretical implications of the research that has accumulated to date.

Catastrophising: The Construct

Pain catastrophising has been broadly defined as an exaggerated negative orientation to actual or anticipated pain comprising elements of rumination, magnification, and helplessness (Sullivan et al., 2001). Early research on pain catastrophising proceeded in the relative absence of a guiding theoretical framework (Spanos, Perlini, & Robertson, 1989). Interest in pain catastrophising continued to grow primarily as a result of the consistency with which research showed that pain catastrophising was associated with a wide range of adverse health and mental health outcomes.

The catastrophising subscale of the Coping Strategies Questionnaire (CSQ) was the first self-report instrument developed to assess catastrophic thinking about pain (Rosenstiel & Keefe, 1983). The CSQ has been used in hundreds of studies examining pain-related catastrophic thinking in individuals with pain condit-
tions. In 1995, my colleagues and I (Sullivan et al., 1995) developed the Pain Catastrophizing Scale (PCS). Part of the impetus for the development of the PCS was the need for a comprehensive evaluation instrument that would permit assessment of pain-related catastrophic thinking even in nonclinical populations. The instructional set of the PCS asks respondents to reflect on previous pain experiences and to indicate the frequency with which they experienced the thoughts and feelings described in the item content of the scale. In this manner, the PCS can be completed even if the respondent was not currently experiencing pain. The development of a measure of pain catastrophizing that could be used in nonclinical samples permitted research on the antecedent status of pain catastrophizing for adverse pain outcomes, as well as basic process research that would have been ethically challenging to conduct on clinical samples.

The items on the PCS were drawn from previous experimental and clinical research on catastrophic thinking in relation to pain experience (Chaves & Brown, 1987; Rosenstiel & Keefe, 1983; Spanos et al., 1979). Factor analyses of the PCS have shown that catastrophizing can be viewed as a multidimensional construct comprising elements of rumination (“I can’t stop thinking about how much it hurts”), magnification (“I worry that something serious may happen”), and helplessness (“There is nothing I can do to reduce the intensity of the pain”). The factor structure of the PCS has been replicated in several investigations (Osman et al., 1997, 2000; Sullivan et al., 1995, 2000; Van Damme et al., 2002).

The PCS is currently one of the most widely used measures of catastrophic thinking related to pain. It has been translated into several languages and has been incorporated in the assessment protocols of pain clinics and rehabilitation centres throughout North America and Europe. Electronic copies of the PCS in various languages, as well as the User Manual, can be downloaded at no cost at the following site: http://sullivan-painresearch.mcgill.ca/pcs1.php

Pain catastrophising was initially construed as a form of appraisal process. Sullivan et al. (Sullivan, Bishop, & Pivik, 1995) suggested that different elements of catastrophising might be related to primary and secondary appraisal processes (e.g., Lazarus & Folkman, 1984). At least at a descriptive level, magnification (e.g., exaggerating the threat value of pain) and rumination (e.g., excessive focus on pain-related stimuli) overlap with the defining features of primary appraisals (e.g., evaluating the threat value of a stimulus; Sullivan et al., 1995). The helplessness dimension of pain catastrophising overlaps with the defining features of secondary appraisals (e.g., evaluation of one’s ability to effectively deal with the stress situation).

Although the appraisal conceptualisation of pain catastrophising has been debated, it remains the view espoused by most researchers in this area of research (Jensen, Turner, Romano, & Karoly, 1991; Keefe, Lefebvre, & Smith, 1999; Severeijns, Vlaeyen, & van den Hout, 2004; Turner & Aaron, 2001). The appraisal conceptualisation of pain catastrophising places the construct broadly within a cognitive theory framework (Beck, Rush, Shaw, & Emery, 1978; Turk, 1996). In its most general form, cognitive theory predicts that exaggerated threat appraisals will lead to negative emotional reactions such as anxiety, fear, and depression, and in turn, impact on pain experience (Beck et al., 1978; Lazarus & Folkman, 1984).

Vlaeyen and his colleagues have elaborated a cognitive–behavioural model of pain-related disability where pain catastrophising is viewed as a key factor in the development of disability associated with pain conditions (Leeuw et al., 2007; Vlaeyen & Linton, 2000). The model predicts that catastrophic thinking following the onset of pain will contribute to heightened fears of movement and increased hypervigilance to pain symptoms. In turn, fear is expected to lead to avoidance or escape of activity that might be associated with pain (Vlaeyen & Linton, 2000). The model is recursive such that increased pain symptoms, distress, and disability become the input for further catastrophic or alarmist thinking (Vlaeyen & Linton, 2000).

Although cognitive conceptualisations of pain catastrophising have intuitive appeal, our research and clinical experience suggested that these models were overly simplistic and lacking in explanatory power. First, cognitive conceptualisations of pain catastrophising are essentially “intraindividual” models that are silent on interpersonal factors associated with pain catastrophising. Our clinical experience suggested that interindividual processes related to support seeking, communication, and validation were central to high catastrophisers’ experience of pain-related distress. In addition, cognitive models tended to “pathologise” catastrophising by situating it as an antecedent of emotional disorders. Our research suggested that catastrophising was present in many healthy individuals who showed no evidence of emotional disorders. In the absence of compelling evidence showing strong links between pain catastrophising and the development of emotional disorders, we felt it was unnecessary to assume a priori that pain catastrophising was unequivocally pathological.

An Interpersonal Model of Pain Catastrophising

Approximately 10 years ago, we advanced the Communal Coping Model of pain catastrophising, proposing that the expressive pain displays and pain-related disability of high catastrophisers might serve a communicative function. The Communal Coping Model of pain catastrophising drew on theoretical perspectives addressing the interpersonal dimensions of coping (Coyne & Fiske, 1992; Lackner & Gurtman, 2004; Lyons, Sullivan, Ritvo, & Coyne, 1995; Taylor, 2000). According to the Communal Coping Model, the pain expressions of high catastrophisers serve to maximise the probability that distress will be managed within a social/interpersonal context (Sullivan, Tripp, & Santor, 2000). Sullivan et al. (2001) suggested that high pain catastrophisers might engage in exaggerated pain expression in order to maximise proximity, or to solicit assistance or empathic responses from others. Pain catastrophisers’ expressive pain displays might also be used to induce others to alter their expectations, reduce performance demands or as a means of managing interpersonal conflict.

Although the coping style of high pain catastrophisers might appear maladaptive, it is important to consider that a communal coping style might only become truly maladaptive under chronic pain or chronic illness conditions. In response to acute pain, exaggerated pain displays might result in a precarious, but sustainable, balance between satisfying support or affiliative needs, and increasing distress. Under acute pain conditions, overall benefits may outweigh costs, and reinforcement contingencies (e.g., increased support, attention, empathic responses) may actually serve to maintain the expressive style of high catastrophisers.
When conditions become chronic, this balance may be disrupted such that costs begin to outweigh benefits. Others’ responses may become increasingly negative when distress displays extend over time (Cano, 2004). The disrupted balance may find expression as increased interpersonal conflict, social rejection and depression (Keefe et al., 2003).

One of the ways in which the Communal Coping Model of pain catastrophising departed from more traditional cognitive-behavioural models of pain was to construe the expression of pain behaviour as “strategic” as opposed to being a natural reaction to experiencing intense pain. This view of pain expression drew spirited debate, and efforts were made to argue that the extant literature on the relation between pain catastrophising and expressive distress displays could be accounted for by a basic cognitive appraisal model (Severeijns et al., 2004). As will be demonstrated by the research reviewed below, strict “intraindividual” models of pain catastrophising would struggle to account for the pattern of findings that has emerged over the past decade.

**Catastrophising and the Communication of Pain Experience**

A central tenet of the Communal Coping Model of pain catastrophising is that catastrophising serves a social communicative function aimed at maximising the probability that distress will be managed within a social/interpersonal context (Coyne & Fiske, 1992; Lyons et al., 1995; Sullivan et al., 2001). If the goals of communal coping include seeking proximity, support or assistance, individuals must be effective in accurately communicating their pain, emotional distress and disability to others in their social environment.

Pain behaviour has been discussed as the vehicle through which pain catastrophisers may elicit proximity, support or assistance from others (Craig, Versloot, Goubert, Vervoort, & Crombez, 2010; Hadjistavropoulos & Craig, 2002; Sullivan et al., 2001). Pain behaviour refers to a variety of actions or postural displays that are enacted during the experience of pain (Prkachin & Craig, 1995). One of the functions of pain behaviour is to minimize pain and reduce the probability of injury exacerbation (Sullivan, 2008). For example, the use of limping to minimise weight bearing on an injured limb reduces the probability of injury exacerbation. But the function of pain behaviour extends beyond the physical management of pain symptoms. Pain behaviour also serves a communicative function. The overt display of distress (grimacing, vocalisations) during pain experience conveys information to observers about the internal state, pain-related limitations, and needs for assistance of the individual who is experiencing pain (Craig et al., 2010; Williams, 2002).

Research has supported a relation between catastrophising and the display of pain behaviour. In one study, participants with chronic pain were filmed while performing a physically demanding lifting task, and the video records were then coded for pain behaviour (Thibault, Loisel, Durand, & Sullivan, 2008). The results showed that pain catastrophising was a significant predictor of pain behaviour, even when controlling for pain severity. In other words, the increased pain behaviour of high catastrophisers could not be explained as simply being the result of experiencing more intense pain.

In another study, healthy young adults were filmed while they were exposed to an experimental pain stimulus (immersing one arm in ice water; Sullivan, Adams, & Sullivan, 2004). Social context was manipulated such that participants experienced pain either while they were alone, or while they were in the company of a research assistant. For high catastrophisers, the presence of the research assistant was associated with an increase in the display of pain behaviour. For low catastrophisers, pain behaviour displays were infrequent and did not vary as a function of the presence of the research assistant. The results indicated that high catastrophisers exhibited more pain behaviour only when there was someone there to “receive” their pain communication. Also of interest, high catastrophisers in the social presence condition reported using fewer pain coping strategies than when tested alone. Sullivan et al. (2004) suggested that high catastrophisers might be less motivated to use strategies that might minimise their displays of physical and emotional distress when an observer is present. Strategies that minimise the experience or expression of physical and emotional distress would be at odds with communal coping goals of maintaining social proximity or maximising support. In other words, if high catastrophisers have a preference for dealing with their distress within an interpersonal or relational context, any effort to minimise their distress will reduce the probability that their coping goals will be achieved.

There is research suggesting that social contextual variables can moderate the negative impact of catastrophising on pain outcomes (Giardino, Jensen, Turner, Ehde, & Cardenas, 2003; Holtzman & Delongis, 2007). For example, the degree to which catastrophising contributes to adverse outcomes has been shown to vary as a function of the presence and quality of the marital relationship. In individuals who report high levels of marital satisfaction, the negative influence of catastrophising on pain outcomes appears to be attenuated (Holtzman & Delongis, 2007). More knowledge of variables that moderate the relation between pain catastrophising and pain outcomes might play an important role in pointing to new avenues for intervention.

A relation between catastrophising and heightened display of pain behaviour has also been observed in children and adolescents. Vervoort and colleagues (Vervoort et al., 2008) examined children’s pain behaviour while undergoing an experimental pain procedure, either in the presence of a parent or a stranger. Low catastrophisers expressed more pain behaviour in the presence of a parent than in the presence of a stranger. High catastrophisers expressed high levels of pain behaviour regardless of whether they were in the presence of a parent or stranger. The authors suggested that low catastrophisers might have chosen to suppress display of pain behaviour in the presence of the stranger given that the absence of a relationship makes the stranger’s response unpredictable. High catastrophisers’ lack of confidence in their ability to deal effectively with pain-related distress might have led them to be indiscriminate in their efforts to draw support or assistance from others in their social environment.

Catastrophisers’ heightened displays of pain behaviour could represent a viable approach to coping with pain only if these displays lead observers to infer more intense pain. To evaluate the communication effectiveness of catastrophisers’ communal coping efforts, (Sullivan, Martel, Tripp, Savard, & Crombez, 2006a) asked observers to infer the pain experience of high and low catastrophisers undergoing a painful experimental procedure. Con-
sistent with the predictions of the Communal Coping Model, observers rated the pain experience of high catastrophisers as being more intense than that of low catastrophisers. Analyses revealed that observers relied on catastrophisers’ more pronounced pain behaviour displays as a basis for their pain inferences.

Catastrophising has also been put forward as a possible explanation for gender differences in pain behaviour. Numerous investigations have shown that women score higher than men on measures of catastrophising, and women display more pain behaviour than men (Sullivan et al., 2001). Experimental and clinical studies have shown that when catastrophising is statistically controlled, gender differences in pain behaviour are no longer significant (Keefe et al., 2000; Sullivan et al., 2000). These findings are consistent with theory and research suggesting that women are more likely than men to adopt a communal and emotionally expressive orientation toward dealing with stress situations (Coyne & Fiske, 1992; Lyons et al., 1995). Through heightened displays of distress and by communicating an inability to deal effectively with a painful situation, women may be maximising the probability that potential caregivers or companions will maintain proximity or offer support or assistance. Conversely, when men adopt a stoic presentation during painful situations, they may minimise the probability that others will offer support or assistance.

Research has shown that high catastrophisers not only experience and express more intense pain, but they also perceive more intense pain in others. In one study, pain-free participants were asked to complete a measure of catastrophising and then viewed a series of video segments depicting individuals undergoing an experimental pain procedure (Sullivan, Martel, Tripp, Savard, & Crombez, 2006b). Participants were asked to infer the level of pain experienced by the individuals depicted in the video segments. Observers with high scores on a measure of catastrophising rated others’ pain as significantly more intense than observers with low catastrophising scores.

The relation between catastrophising and heightened perception of others’ pain could have implications for how catastrophising might influence caregiving behaviour. One possibility is that the caregiver with high levels of catastrophising might be better able to detect pain behaviours and in turn respond with appropriate intervention. However, the high catastrophising spouse of a chronic pain patient might be motivated to engage in excessive palliative or solicitous behaviour to reduce the patient’s expression of distress, and inadvertently contribute to increased disability in the pain patient. Alternately, the low catastrophising spouses’ reduced sensitivity to pain behaviour might frustrate the high catastrophising patient’s efforts to communicate his or her pain.

In a recent study, we examined the role of spouses’ level of catastrophising on chronic pain patients’ display of pain behaviour (Gauthier, Thibault, & Sullivan, 2011). In this study, we separated our participant couples into four categories of couple catastrophising (i.e., high spouse—low patient, high spouse—high patient, low spouse—high patient, low spouse—low patient). Intuitively, one might have predicted that the highest rates of pain behaviour might be observed when both spouses and patients had high catastrophising scores. Surprisingly, the highest levels of pain behaviour were observed when high catastrophising patients were married to low catastrophising spouses. Gauthier et al. (2011) suggested that the high catastrophising chronic pain patient might need to increase the “volume” of pain communication in order to compensate for the low catastrophising spouses’ tendency to underestimate pain signals.

The latter finding might have implications for the manner in which clinicians respond to patients with high levels of catastrophising. In the past, behavioural models of pain behaviour advocated ignoring patients’ pain displays (Fordyce, 1976). These recommendations were based on the view that pain behaviours were reinforced by attention, and could be extinguished through systematic nonreinforcement. However, the findings of Gauthier et al. (2011) suggest that, at least for high catastrophisers, ignoring pain behaviours might lead to an increase in pain behaviour. To the extent that pain behaviour contributes to disability, ignoring patients’ pain behaviour might inadvertently increase disability as well (Prkachin, Solomon, & Ross, 2007). Disclosure techniques, empathic listening and validation might be more effective in reducing high catastrophisers heightened distress displays than ignoring their distress displays (Cano, Barterian, & Heller, 2008; Linton, Boersma, Vangronsveld, & Fruzzetti, in press; Thorn, Ward, Sullivan, & Boothy, 2003).

The research that has accumulated to date has been remarkably consistent is showing a relation between catastrophising and a propensity to display pain behaviour. Findings showing that the relation between catastrophising and pain behaviour varies as a function of social context strongly suggests that interpersonal processes underlie, at least in part, high catastrophisers’ heightened pain expression. Albeit consistent with the predictions of the Communal Coping Model, research conducted to date does not provide direct evidence that pain catastrophisers enact pain behaviours specifically to attain certain interpersonal goals.

The attainment of interpersonal goals remains a speculative process that might underlie the relation between catastrophising, pain experience, and pain expression. Alternate explanations must also be considered. For example, it has been suggested that appraisals of threat and helplessness might be sufficient to account for the relation between pain catastrophising and pain outcomes (Severeijns et al., 2004). Although the latter explanation cannot be ruled out, research to date does not support the view that pain catastrophisers are less well equipped to deal with pain situations. Previous research has shown no relation between catastrophising and the repertoire of pain coping strategies (Sullivan et al., 1995), and pain catastrophisers employ fewer pain coping strategies only when in the presence of others (Sullivan, Adams, & Sullivan, 2004).

Theoretical accounts of pain behaviour (Hadjistavropoulos & Craig, 2002; K. Prkachin & Craig, 1995; Sullivan, 2008) have discussed the operation of central motor programs responsible to the organisation of action in response to painful stimulation. It has been suggested that motor programs involved in the expression of pain might be activated when pain intensity rises beyond a certain threshold (Prkachin & Craig, 1995). It is possible that pain catastrophising might be associated with a lower threshold for the activation of motor programs for the expression of pain. The latter explanation would suggest that the heightened pain behaviour of catastrophisers might reflect the operation of automatic processes and not the intentional display of distress to attain interpersonal goals. Questions concerning the relative automaticity or intentionality of the pain behaviour displays of high catastrophisers have only begun to be systematically addressed in pain research.
Catastrophising and Interpersonal Traits

Numerous investigators have debated the state versus trait conceptualisation of pain (Severeins et al., 2004; Sullivan et al., 2001). Early views regarded catastrophising as a readily modifiable, situation-specific cognitive style. For example, following instructions not to engage in catastrophic thinking, undergraduate subjects who had previously been identified as catastrophisers were no longer classified as catastrophisers (Spanos, Hendrikus, & Brazil, 1981). Following a brief stress inoculation procedure, the majority of undergraduate subjects who had initially been classified as catastrophisers no longer reported catastrophic thoughts during a cold pressor procedure (Vallis, 1984).

Several reports also indicated that catastrophising in patients with pain conditions could be reduced through participation in cognitive or behavioural interventions (Jensen, Turner, & Romano, 2001; Smets, Vlaeyen, Kester, & Knottnerus, 2006; Spinhover et al., 2004). Many of these studies have pointed to importance of reducing pain catastrophising as a key factor in determining the success of interventions for chronic pain (Spinhover et al., 2004; Sullivan et al., 2005).

However, the available literature suggests that, in the absence of treatment, catastrophising is a relatively enduring mode of responding to painful experiences. Test-retest correlations of .70 to .80 have been reported in samples of undergraduates over a 6- to 8-week period (Sullivan et al., 1995) and rheumatoid arthritis patients over a 6-month period (Keefe, Brown, Wallston, & Caldwell, 1989). Although test–retest findings suggest a high degree of stability, catastrophising may change as a function of age. Lower levels of catastrophising have been associated with older age in patients attending a university dental clinic (Sullivan & Neish, 1998) and women following breast cancer surgery (Jacobsen & Butler, 1996). Although catastrophising does not appear to have the immutable character ascribed to personality traits, at least in the absence of intervention, it appears to remain stable in both chronic pain and asymptomatic populations.

A number of investigations have linked catastrophising to a number of trait-like characteristics. Measures of catastrophising have been shown to be significantly correlated with neuroticism (Goubert, Crombez, & Van Damme, 2004), trait anxiety (Sullivan, Thorn, Rodgers, & Ward, 2004), and depression (Sullivan & D’Eon, 1990). Lackner and Gurtman (2004) examined the relation between catastrophising and interpersonal traits. Their findings characterise high catastrophisers as intrusive and needy, controlling, socially inhibited, nonassertive, self-sacrificing and vindictive. Correlations were in the modest to moderate range ($r = .29–.42$), suggesting that these traits do not characterise all individuals with high catastrophising scores. McWilliams and Holmberg (2010) reported that catastrophising was inversely correlated with self-esteem.

Interpersonal variables such as attachment style, perceived support, support seeking, and support entitlement have also been shown to be associated with pain catastrophising. For example, several investigations have shown an association between pain catastrophising and insecure and/or anxious attachment styles in both pain-free and clinical samples (Meredith, Strong, & Feeney, 2005; Tremblay & Sullivan, 2010). Insecure and anxious attachment styles have been associated with low self-esteem, high fear of abandonment, and a hyperactivating style of support seeking (McWilliams & Holmberg, 2010; Meredith, Strong, & Feeney, 2006).

A number of investigations have shown that high catastrophisers report receiving less social support from others in their social environment (Boothy, Thorn, Overduin, & Ward, 2004; Buenaver, Edwards, & Haythornthwaite, 2007). In another study, Cano (2004) reported that higher levels of catastrophising were associated with greater support provision by the spouse, but only in the short term. In the long-term, high catastrophising was associated with more punishing responses from the spouse. Increased support seeking by high catastrophisers has been associated with greater caregiver stress (Keefe et al., 2003).

Cano and colleagues (2009) showed that high catastrophisers not only perceive themselves as lacking social support, they also feel “entitled” to more support than they are receiving. The authors suggested that support entitlement might lead to indirect methods of support seeking; for example exhibiting pain behaviour or other distress displays as opposed to verbal requests for support; which are likely to be experienced as aversive by significant others. Analysis of observational data revealed that high levels of support entitlement were associated with greater invalidation responses from spouses (Cano, Leong, Heller, & Lutz, 2009).

Other justice-related concerns have also been shown to be central to high catastrophisers’ pain experience. Recent research has shown that catastrophising is highly correlated with measures of perceived injustice (Sullivan et al., 2008). It appears that high catastrophisers have a propensity to view their struggle with pain as being unjust, to feel that the severity of their condition is not being appreciated by others, and to blame others for their situation. Anger reactions and revenge motives have been discussed as likely sequella of perceived injustice (Orth, Montada, & Maercker, 2006; Mikula, Scherer, & Athenstaedt, 1998; Ferguson & Rule, 1983).

Catastrophising and Treatment Outcomes

Accumulating evidence suggests that pain catastrophising is a prognostic indicator for poor treatment outcomes. High levels of pain catastrophising have been shown to predict poor outcome to pharmacological (Mankovsky, Lynch, Clark, Sawynok, & Sullivan, in press), surgical (Sullivan, Tanzer, et al., 2009), physical (Wideman & Sullivan, 2011a) and psychological interventions for pain conditions (Sullivan et al., 2005). The research reviewed in this article suggests that interpersonal aspects of pain catastrophising might contribute to some of the poor treatment outcomes that have been observed.

The research that has addressed the personality or trait correlates of catastrophising paints a dark picture of the high catastrophiser; the portrait that emerges is of individuals who are needy, intrusive, controlling, vindictive, prone to anger reactions and likely to entertain revenge motives. It is not clear whether these character depictions describe all individuals with high scores on catastrophising or whether these are context-dependent traits that are most likely to be expressed consequent to the struggles of chronic illness.

A number of investigations have pointed to the important role of the clinician-client therapeutic alliance as a critical determinant of...
treatment outcomes (Ackermann & Hilsenroth, 2003). Clinicians might experience difficulty developing strong therapeutic alliance with individuals who have a propensity for anger reactions, vindictiveness and revenge motives (Burns, Higdon, Mullen, Lansky, & Wei, 1999). If the development of a strong therapeutic alliance is compromised by interpersonal characteristics of the high catastrophiser, progress in treatment will be compromised as well. Treatment outcomes might be further compromised if the high catastrophisers’ clinical presentation is complicated by dependency-related interpersonal traits such as neediness, intrusiveness, and lack of assertiveness.

When we first advanced the Communal Coping Model of pain catastrophising, we suggested that high catastrophisers’ coping efforts might inadvertently contribute to adverse pain outcomes. Research over the past decade has begun to elucidate how such unintended adverse outcomes might arise. For example, the findings of Cano and her colleagues suggest that the effectiveness of catastrophising as a strategy to elicit support might be time dependent; becoming less effective over time as the support resources of the social environment are depleted. As depletion of support resources gives rise to punishing, invalidating or anger responses from the social environment, the stage is set for the development of pain-related mental health complications. Research has shown that interpersonal environments characterised by criticism and hostile communication are associated with greater risk of precipitating a depressive episode (Hooley, Orley, & Teasdale, 1986).

Catastrophisers’ heightened displays of pain behaviour might also have unintended adverse effects. Research shows that heightened expressions of pain behaviour are associated with a variety of adverse outcomes such as increased pain, depression, functional disability and prolonged work absence (Prkachin, Schultz, Berkowitz, Hughes, & Hunt, 2002; Prkachin, Schultz, & Hughes, 2007). The expression of pain behaviour might contribute to disability directly by compromising task performance efficiency. The expression of pain behaviour might also contribute to disability indirectly by influencing others’ judgments of an individual’s ability to perform certain tasks. The observation of heightened levels of pain behaviour in a pain patient might lead physicians to infer high levels of pain and in turn, consider prescribing an extended period of sick leave. The observation of heightened levels of pain behaviour might also lead an employer to consider that the employee is unable to meet his or her occupational responsibilities. As such, pain behaviour may not only be disruptive to activity engagement, but the social response to pain behaviour might also contribute to prolonged disability.

The research that has accumulated to date suggests that factors such as the communication of support needs, perceived injustice, and pain behaviour should be targets of intervention for individuals with high scores on measures of catastrophising. However, these are not topics that have been addressed in traditional cognitive-behavioural approaches to the treatment of individuals with pain conditions (Otis, 2007; Turk, 1996; Turk et al., 1983).

Recent research from our centre has revealed that for high catastrophisers, a reduction of at 25% to 30% in catastrophising scores is required to affect clinical outcomes (e.g., pain severity, disability, depression) in a meaningful manner (Scott & Sullivan, 2011). An examination of the literature on outcomes of pain treatment programs suggests that reductions in catastrophising of this magnitude are rarely achieved. For example, Smeets et al. (2006) reported that interventions such as physiotherapy, problem-solving therapy or even combined treatment yield approximately 10% reductions in pain catastrophising.

In recent years, targeted treatments have been developed designed specifically to reduce catastrophic thinking (Sullivan, Adams, Rhodenizer, & Stanish, 2006; Thorn, Boothy, & Sullivan, 2002). Some of these have taken the form of group interventions using cognitive-behavioural techniques such as thought monitoring, cognitive restructuring and reappraisal (Thorn et al., 2002). Other interventions have taken the form of individual treatment where behavioural activation and life role resumption are used to augment the impact of cognitive–behavioural techniques for pain-related disability (Sullivan, Adams, et al., 2006).

Over the past decade, we have been examining various methods of targeting psychosocial risk factors for problematic outcomes of pain conditions. One such intervention program, known as the Progressive Goal Attainment Program (PGAP), includes a variety of techniques aimed at reducing pain catastrophising as well as the correlates of pain catastrophising such as negative expectancies, anxiety/fear, disability beliefs and perceived injustice. The PGAP uses a number of techniques designed to address the interpersonal dimensions of catastrophising. Early in the program, disclosure and validation techniques are used as tools for building a strong therapeutic alliance with the client. These same techniques have been shown to reduce physical and emotional distress associated with catastrophising and perceived injustice (Sullivan & Neish, 1999; Wideman & Sullivan, 2011b). The PGAP also uses structured activity techniques to assist the individual in resuming important interpersonal roles related to family, social, and community functioning. Although the tools used in the PGAP address themes related to interpersonal functioning, the ultimate objective of the intervention is to facilitate resumption of occupational activities. Within the philosophical orientation of the PGAP, work is construed as an element of interpersonal functioning as it represents one of the major sources of social contact in individuals’ day-to-day lives.

A number of investigations have shown that participation in the PGAP can yield significant reductions in pain catastrophizing and other psychosocial risk factors. In a sample of chronic work-disabled individuals, Sullivan et al. (2003) reported participation in the PGAP led to a 33% reduction in pain catastrophising and a 32% reduction in pain-related fear. Sullivan et al. (Sullivan, Adams, et al., 2006) reported that participation in the PGAP led to a 32% reduction in pain catastrophising and 20% reduction in pain-related fear in individuals with chronic whiplash symptoms. In a recent study, Sullivan and Adams (2010) reported that injured workers who participated in the PGAP showed 50% reduction in catastrophising, 20% reduction in pain-related fear, and 58% reduction in depressive symptoms (Sullivan & Adams, 2010). In each study, reductions in catastrophising significantly predicted return to work.

The positive outcomes of the PGAP, coupled with its low cost, have led to significant uptake of the intervention in Canada as well as abroad. The PGAP is currently considered a preferred service by numerous workers compensation boards and long-term disability insurers in Canada. The PGAP has been adopted as a national strategy for disability prevention by the state injury insurer of New Zealand. Randomised clinical trials of the PGAP are currently being conducted in Ireland and Sweden. There has also been
significant interest in examining how the PGAP might be modified to target disability associated with other debilitating health and mental health conditions. The U.S. Social Security Administration is currently conducting a trial of a telephonic version of the PGAP to reduce disability in individuals with chronic debilitating health (e.g., cardiovascular disease, cancer survivors) and mental health conditions (major depressive disorder, bipolar disorder). A modified version of the PGAP is currently being tested by the U.S. Department of Veterans Affairs as an approach to foster rehabilitation progress in combat veterans suffering from PTSD.

Our experience to date suggests that reducing catastrophising should not be the ultimate objective of an intervention. Catastrophising is not a mental disorder in need of cure; rather, it represents an obstacle to recovery or rehabilitation progress for individuals with debilitating health or mental health conditions. Our work has focused primarily on promoting return to work in individuals with debilitating pain conditions. Our intervention programs integrate techniques designed to target pain catastrophising with techniques designed to promote occupational reintegration. The specific nature of catastrophising-targeted techniques used in an intervention program will vary as a function of the primary objective of a treatment program. For example, the set of catastrophising-targeted techniques required in a program that aims to improve response to analgesic medication in palliative care would differ from the techniques used in a program designed to achieve resumption of occupational activities. But regardless of the ultimate aim of an intervention, our work suggests that treatment success will be optimised when techniques are included that target the interpersonal dimensions of pain catastrophising.

Future Directions

Mounting research suggests that the interpersonal aspects of interventions might be more important than the symptom-reduction techniques in contributing to successful outcome (Ackermann & Hilsenroth, 2003; Martin, Garske, & Davis, 2000). This has been shown in other domains of research and certainly appears to be true in the psychosocial or rehabilitation treatment of individuals with pain conditions. However, cognitive–behavioural approaches to the management of pain conditions have lagged in the manner in which interpersonal aspects of pain experience have been addressed as central targets of intervention. The content of most manualised cognitive–behavioural treatment approaches to pain continues to focus almost exclusively on intraindividual processes as opposed to interindividual processes associated with pain experience and expression.

More research is needed to elucidate the interpersonal correlates of catastrophising in order to ensure that all the important dimensions of catastrophising are targeted in treatment. More research is also needed to examine the degree to which different intervention techniques yield reductions in levels of catastrophising. The modest impact of current treatment approaches on reducing catastrophising suggests that traditional intervention approaches might not be well suited for individuals who present with high levels of catastrophising (Westman, Boersma, Leppert, & Linton, 2011).

This article has focused primarily on the psychological correlates of pain catastrophising. There is also an emerging literature that links catastrophising to a wide range of neurophysiological processes. For example, numerous investigations have shown that pain catastrophising is associated with neurophysiological dysfunction that might contribute to adverse pain outcomes (Quartana, Campbell, & Edwards, 2009). It has been suggested that pain catastrophising might be associated with dysregulation or dysfunction in endogenous opioid pain-control systems that might compromise the effectiveness of pharmacological interventions for pain (Edwards, Bingham, et al., 2006; Fillingim et al., 2005). It has also been suggested that pain catastrophising might interfere with processes involved in descending inhibition of pain (Edwards & Fillingim, 2001). Findings suggest that pain catastrophising may augment processes involved in temporal summation of pain (Edwards, Smith, Stonerock, & Haythornthwaite, 2006; Price et al., 2002; Sullivan, Lariviere, & Simmonds, 2010).

A challenge for future research will be the development of conceptual models that specify the structural and operational mechanisms that link psychological and physiological processes involved in pain perception and expression. This challenge of identifying the elusive bridges that connect psychological and physiological processes of pain is not unique to research on pain catastrophising but one that is faced in many domains of health psychology and behavioural medicine. Greater understanding of the mechanisms linking psychological and physiological processes of pain experience holds promise of laying an empirical and conceptual foundation for the development of more effective treatment approaches for individuals suffering from pain conditions.

Résumé

Le catastrophisme a été défini de façon générale comme une attitude négative exagérée par rapport à la douleur réelle ou anticipée, qui inclut les notions de rumination, d’amplification et d’impuissance. Des centaines d’études ont documenté l’association entre le catastrophisme et ses répercussions négatives, dont une douleur de plus grande intensité, des problèmes de santé mentale et l’incapacité. Le présent article oppose les différents modèles conceptuels qui ont été proposés pour expliquer en quoi le catastrophisme peut influer sur l’intensité et sur les répercussions de la douleur. Il est affirmé que les modèles « intrapersonnels » traditionnels du catastrophisme sont trop simplistes et qu’ils ne permettent pas d’expliquer le phénomène. L’article passe en revue la recherche montrant que les variables interpersonnelles et le contexte social constituent des déterminants clés dans la relation entre le catastrophisme et ses répercussions. On y discute des conséquences cliniques de la recherche qui montre que les facteurs interpersonnels sous-tendent la relation entre le catastrophisme et les répercussions. On y discute des conséquences cliniques de la recherche qui montre que les facteurs interpersonnels sous-tendent la relation entre le catastrophisme et ses répercussions. On y discute des conséquences cliniques de la recherche qui montre que les facteurs interpersonnels sous-tendent la relation entre le catastrophisme et ses répercussions. On y discute des conséquences cliniques de la recherche qui montre que les facteurs interpersonnels sous-tendent la relation entre le catastrophisme et ses répercussions.

Mots-clés : catastrophisme, douleur, incapacité, dépression.

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