

The Effects of Social Context and Expressive Writing on Pain-Related Catastrophizing and Pain Behaviors

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Adding to research investigating ways for catastrophizers to cope with their pain, the current study examined the effects of social context and the use of expressive writing on pain catastrophizing, pain unpleasantness, and pain intensity. A two (observer present or absent) X two (expressive vs. control writing) research design was employed; pain was induced experimentally via a cold pressor task; pain catastrophizing, intensity, and unpleasantness were measured by self-report and observation of behavioral indicators of discomfort. It was predicted that the expressive writing / observer absent condition would result in the lowest reported pain catastrophizing, unpleasantness, and intensity scores and that subjects in the observer present condition would use more communicative pain behaviors. Results indicated a trend towards lower pain catastrophizing scores in the expressive writing / observer absent condition. There was also a significant correlation between pain behaviors and social context.

Everyone experiences pain, but the way pain is experienced differs among individuals. Some people have a more negative response to pain; one example can be seen in individuals who experience pain-related catastrophizing. Pain-related catastrophizing refers to a negative mental set regarding pain which heightens the intensity of pain as well as other adverse effects (Giardino, Jense, Turner, Ehde, & Cardenas, 2003). Therefore, it is important to study the behaviors of individuals who experience catastrophizing to discover ways to prevent and minimize these negative effects. Adding to previous research examining coping strategies for catastrophizing, the current study examines the effects of social context and expres-

sive writing on pain catastrophizing, intensity, and unpleasantness. Social context effects on pain behaviors are also examined.

Pain-Related Catastrophizing

Pain-related catastrophizing is a type of pain response involving an exaggerated negative perception of pain which can occur during an actual or anticipated pain experience (Sullivan, Thorn, Haythornthwaite, Keefe, Martin, Bradley, & Lefebvre, 2001). Three characteristics are associated with pain-related catastrophizing: rumination, magnification, and helplessness. Catastrophizers tend to think about their pain experiences over and over again, focus on and magnify the pain experience, and feel as though they lack the ability to do anything about the pain (Sullivan, Bishop, & Pivik, 1995; Sullivan et al., 2001; Thorn, Boothby, & Sullivan, 2002). These characteristics contribute to the individual undergoing a more intense pain experience. Catastrophizing has been shown to be correlated with many adverse effects, including increased intensity of pain, prolonged hospitalization, higher usage of analgesic medications, and higher reports of disability and depression (Turner, Jensen, & Romano, 1999; Swinkels-Meewisse, Roelofs, Oostendorp, Verbeek, & Vlaeyen, 2005).

Previous research indicates that catastrophizing contributes to heightened physical and emotional distress. Individuals who experience pain catastrophizing have lowered self-reliance in their ability to effectively use pain management techniques which inadvertently leads to a more obstinate pain experience (Sullivan, Adams, & Sullivan, 2003). Catastrophizers have the tendency to focus on their pain sensations, which may interfere with the effectiveness of pain management strategies (Giardino et al., 2003).

Pain Behavior

Pain behaviors are postural displays or vocalizations that are exhibited during a pain experience and are used as a way to communicate pain and garner social support (Sullivan et al., 2003). These behaviors can be used for either communicative or pain management purposes. Communicative pain behaviors are used for the primary purpose of conveying the pain experience whereas pain management behaviors are primarily used to manage the pain experience. Since catastrophizers rely on pain behaviors to communicate their pain, they strive to be effective when using pain behaviors to express their pain (Sullivan et al., 2003) and therefore are prone to increasingly exaggerated displays. Such exaggerated displays of

pain behaviors can actually contribute to a more adverse pain experience; therefore catastrophizers inadvertently make their pain experience worse (Craig & Prkachin, 1978).

Catastrophizers use expressive pain behaviors for other reasons as well. Keefe, Kashikar-Zuck, Robinson, Salley, Beaupre, Caldwell, Baucom, and Haythornthwaite (1997) found that catastrophizers used expressive pain behaviors in the presence of others in order for people to lower their expectations and performance demands. Catastrophizers may think that if others see they are in pain, people may not expect them to perform certain tasks. Sullivan et al. (2003) found that high catastrophizers seem to display more communicative type behaviors (vocalizations and grimaces) for longer durations when an observer is present. The participants were so focused on communicating their pain that they reported using minimum behaviors to effectively reduce their pain.

Social Context

Social context, as related to pain, refers to the effect that people in the environment have on pain experiences. Previous research found that social context plays a significant role in the experience of pain. The communal coping model of catastrophizing (Sullivan et al., 2003) suggests that catastrophizers are affected by their social context and use it to manage their pain through an interpersonal perspective. Sullivan et al. (2003) suggest that catastrophizers garner support from others by the use of pain behaviors when they are undergoing a pain experience; therefore, social context becomes a conditioned stimulus for pain behaviors in catastrophizers (Schwartz, Slater, & Birchler, 1996).

Sullivan et al. (2003) found that catastrophizers were less likely to use effective coping mechanisms to minimize their pain when they were in the presence of an observer. Instead, the subjects focused on finding ways to express their pain to the observer. Giardino et al. (2003) conducted a study involving married couples and found that catastrophizing was highest when the spouse was present. The study indicated that sensory pain and catastrophizing were highest among subjects in relationships with more solicitous spouses. Giardino et al.'s (2003) study supports the communal coping model because subjects reported higher levels of catastrophizing when their spouses were present and scores were highest in relationships in which the spouse showed more concern for the subject. Schwartz et al. (1996) found that catastrophizers were less likely to utilize coping strategies when an observer was present, because they were occupied with trying to garner social support from the individual.

Expressive Writing

Expressive writing is defined as the expression in writing of thoughts and feelings related to traumatic events, crisis, loss, or other stressful events (Koopman, Ismailji, Holmes, Classen, Palesh, & Wales, 2005). The purpose of expressive writing is to provide an outlet for the expression of these feelings, which research shows lowers some of the negative effects associated with the feelings (Sullivan & Neish, 1998). Koopman et al. (2005) found that the use of expressive writing decreased depression symptoms among individuals. Women who survived intimate partner violence were designated an expressive writing task and showed a significant decrease in levels of depression. The women were able to utilize the writing task as an outlet to express their feelings from their traumatic experiences which, in turn, decreased their depression levels (Koopman et al., 2005).

Expressive writing has also been found to reduce physical symptoms and frequency of medical appointments among breast cancer patients and to produce significant improvement in health of people with physical and psychological disorders (Low, Stanton, & Danoff-Burg, 2006; Frisina, Borod, & Lepore, 2004). Frisina et al. (2004) conducted a meta-analysis on studies that examined the use of expressive writing and found that expressive writing significantly improved the health of the subjects who utilized the writing. Thought suppression, which is the opposite of expressive writing, has been found to be correlated with heightened pain intensity (Pennebaker, 1993). Although expressive writing has been shown to be beneficial with many physiological and physical disorders, there has been little research on its effects on pain-related catastrophizing.

Purpose of Current Study

The purpose of the current study is to examine the effects of social context and expressive writing on pain catastrophizing, unpleasantness, and intensity. It was hypothesized that subjects in the expressive writing / observer absent condition would report the lowest pain catastrophizing, unpleasantness, and intensity scores. Scores were expected to be the lowest in this condition because subjects were provided an outlet (expressive writing) to express the negative thoughts and feelings they had towards the pain experience, and the subjects were socially isolated, allowing them to focus more on pain management techniques instead of trying to communicate their pain to other individuals.

The current study also examined the effects of social context on pain behaviors. It was hypothesized that subjects in the observer present condition would display more communicative pain behaviors than those in the observer absent condition. Subjects in the observer absent condition were expected to display more pain management behaviors.

Method

Participants

Participants consisted of 88 undergraduate students from The University of Alabama. Some participants were given course credit for their psychology course in exchange for participation. Participants were excluded if they did not meet the health requirements listed on the eligibility document.

Materials and Measures

Pain Catastrophizing Scale (PCS). The PCS (Sullivan et al., 2003) contains 13 items which measure catastrophizing levels. The items employ a five-point scale ranging from zero, which represents “not at all,” to four, which represents “all the time.” The PCS provides an overall score of catastrophizing and sub-scale scores of rumination, magnification, and helplessness, which are characteristics of pain-related catastrophizing. The PCS has a test-retest reliability of $r = +.75$.

Visual Analogue Scale (VAS). The VAS was used to measure perceived pain intensity and unpleasantness. The scale consists of two 10 cm lines on which participants rate their pain intensity (VAS_I) and unpleasantness (VAS_U) by placing a vertical mark in the area that best represents their pain. The lines range from extremes of “not at all intense” to “extremely intense” and “not at all unpleasant” to “extremely unpleasant.” The VAS has a test-retest reliability of $r = +.97$ (Sandford, Kersh, Thorn, Rich, & Ward, 2002).

Cold pressor apparatus. The cold pressor apparatus was used to induce pain. The apparatus consists of a plastic cooler filled with water which is divided into two compartments separated by an adjustable wire mesh. One compartment is filled with ice and the other compartment has an armrest set on an incline on which the participants place their arm. A pump is placed in the cooler to circulate the water and to maintain a temperature of 0-2 °C, which is monitored with a thermometer.

Thought record booklet. The thought record book consisted of blank sheets of paper stapled together which was used by the participants for the writing task.

Pain Behavior Coding. Participants were videotaped during the cold pressor procedure and one minute after the procedure in order to record pain behaviors. Trained coders reviewed the tapes and coded the behaviors using the coding method described in the *Pain Behavior Coding Manual for the Cold Pressor Procedure* (Sullivan et al., 2003). Behaviors (e.g., vocalizations, bodily movements) were coded based on their frequency and type.

Procedure

Participants were told the study concerned the association between thought processes and the experience of pain. Participants read and listened to the experimenter read aloud the informed consent form. After signing the informed consent, participants were asked to complete the exclusionary form, which included some of the same criteria as the informed consent, as a second safety measure. If participants met all the requirements, they were allowed to continue and complete the first Pain Catastrophizing Scale (PCS1).

Next, participants were asked to remove all accessories from their arm and submerge their arm into the water flush against the adjustable armrest of the cold pressor apparatus for 15 seconds. They removed their arm and immediately completed the first Visual Analogue Scale (VAS1). Next the participants were randomly assigned to one of four groups: expressive writing task with an observer present (EW/OP); expressive writing task with observer absent (EW/OA); control writing task with an observer present (CW/OP); and control writing task with observer absent (CW/OA). The experimenter played the role of the observer.

The participants proceeded to one of the following steps depending on to which group they were assigned. Participants in the expressive writing groups were given five minutes to write about their thoughts and feelings regarding the pain stimulus (cold pressor apparatus). The participants were told that if they ran out of things to write to repeat what they had already written until the five minutes were completed. Participants assigned to the control writing groups were told to write about an event that happened the previous day. They were also told that if they ran out of things to write to repeat what they had already written. The experimenter left the room while the participants completed their writing task.

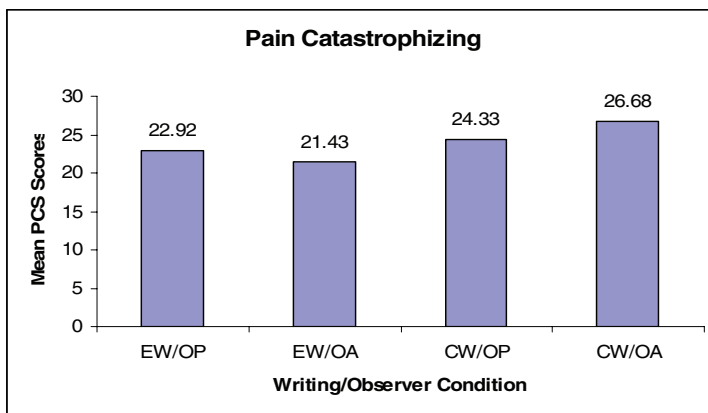
After five minutes elapsed, the experimenter returned to the room and instructed the participant to stop the writing task. Next, the cold pressor task was administered again for a period of one minute, which was videotaped. If participants did not keep their hand submerged in the cold pressor the entire minute, they were excluded from the study. The experimenter remained in the room during the cold pressor task if the participant was in the observer present condition; in the observer absent condition, the participant was left in the room alone to complete the cold pressor task. A tape recording designated start and stop times when the experimenter was absent. After completing the cold pressor task, participants were allotted 15 seconds to complete the second Visual Analogue Scale (VAS2) and to wipe off the immersed arm, after which they were told to remain seated for one minute for post-immersion observation. After the minute elapsed, video taping stopped and participants completed the second Pain Catastrophizing Scale (PCS2) and were debriefed.

Results

Pain Catastrophizing

A two-way (expressive writing \times social context) ANCOVA (analysis of covariance) was performed on pain catastrophizing scores with PSC1 scores used as the covariant. The results of the analysis showed that there was a trend towards a significant interaction in the expressive writing / observer absent (EW/OA), condition supporting the hypothesis, $F(1,83) = 1.986$, $p = .163$ (Figure 1). Subjects in this condition reported lower catastrophizing scores than the subjects in the other conditions.

Figure 1

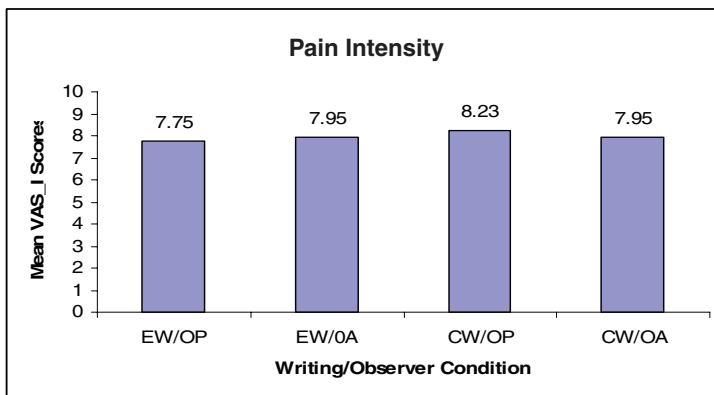


EW/OP = Expressive Writing / Observer Present; EW/OA = Expressive Writing / Observer Absent; CW/OP = Control Writing / Observer Present; CW/OA = Control Writing / Observer Absent

Pain Intensity

A two-way (expressive writing × social context) ANCOVA with VASI_1 as the covariant was conducted on pain intensity scores. The two-way interaction showed no significant interaction or main effects between the variables, $F(1,83) = .033$, $P = .857$ (Figure 2). The use of expressive writing or the absence or presence of an observer did not seem to affect pain intensity. Subjects in each condition reported similar pain intensity levels.

Figure 2

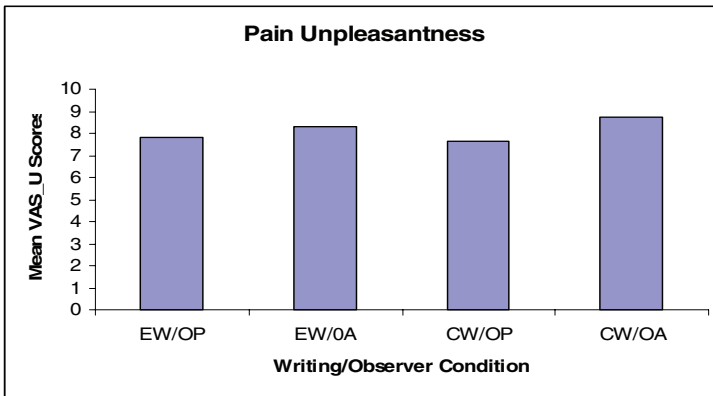


EW/OP = Expressive Writing / Observer Present; EW/OA = Expressive Writing / Observer Absent; CW/OP = Control Writing / Observer Present; CW/OA = Control Writing / Observer Absent

Pain Unpleasantness

A two-way (expressive writing × social context) ANCOVA was performed on pain unpleasantness with VASU_1 as the covariant. There was no significant interaction for expressive writing and social context, $F(1,83) = .001$, $p = .978$ (Figure 3). The presence of an observer showed a significant effect on pain unpleasantness scores, $F(1,83) = 3.198$, $P = .051$. Subjects in the observer present condition reported significantly lower scores than subjects in the observer absent condition.

Figure 3



EW/OP = Expressive Writing / Observer Present; EW/OA = Expressive Writing / Observer Absent; CW/OP = Control Writing / Observer Present; CW/OA = Control Writing / Observer Absent

Pain Behaviors

A Pearson Correlation test was conducted to assess the relationship of the observer condition and pain behaviors. The results indicated that there was a significant negative relationship between communicative pain behaviors and the observer condition, $r(86) = -.234$, $p = .028$. When an observer was present, subjects displayed more behaviors to communicate their pain rather than use behaviors to manage their pain. There was a trend towards a significant positive relationship between pain management behaviors and the observer condition, $r(86) = .186$, $p = .082$. When subjects were left alone during the experiment, they exhibited more pain management behaviors (Table 1). The results also indicated a positive correlation between pain catastrophizing and communicative pain behaviors, $r(86) = .212$, $p = .048$.

Table 1

Average number of pain behaviors displayed among observer condition

	Communicative Pain Behaviors	Pain Management Behaviors
Observer Absent	2.1	7.3
Observer Present	3.8	5.8

Discussion

The pain catastrophizing results supported the hypothesis that subjects in the expressive writing / observer absent condition would report the lowest levels of pain catastrophizing. Although the results were not significant, they showed a trend toward significance for lower PCS scores when the subjects utilized the expressive writing task and were alone during the cold pressor task. Supporting previous research, subjects seemed to benefit from the expressive writing task when used as an outlet for their negative thoughts and feelings regarding the pain experience, and they also benefited from being isolated during the pain experience.

Pain behaviors results indicated that social context does have a significant effect on the use of pain behaviors. The results supported the hypothesis that subjects in the observer present condition would display more communicative pain behaviors as a way to garner social support and to try and deal with their pain through an interpersonal process, as opposed to subjects in the observer absent condition who would display more pain management behaviors. Subjects in the observer absent condition were able to employ more pain management techniques because there was no one present for them to communicate their pain to, which allowed them to focus on more pain management behaviors as opposed to communicative pain behaviors.

Although the results for pain catastrophizing and pain behaviors implicated a trend toward significance, the results may have been significant if the subjects were from actual chronic pain populations. When studying pain, it is difficult to generalize findings from pain that is induced experimentally to actual chronic pain because these experiences are different from one another. Experimental pain is usually short-lived whereas chronic pain is persistent, so the effects from these experiences are usually very dissimilar. In future studies, social context and expressive writing would probably play a more significant role if subjects were from an actual chronic pain population.

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