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# Need satisfaction and catastrophizing: Explaining the relationship among emotional ambivalence, pain, and depressive symptoms

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## Abstract

Recent literature has revealed the associations among ambivalence over emotional expression (AEE), pain, and depressive symptoms. However, few studies have examined factors explaining these associations. The goal of the study is to examine the potential mediating role of basic needs and pain catastrophizing. In an ethnically diverse undergraduate sample ( $N = 255$ ), we found that AEE was positively associated with both depressive symptoms and pain. Catastrophizing fully mediated the association between AEE and pain, while catastrophizing and unfulfilled needs partially mediated the association between AEE and depression. Findings suggest that need satisfaction and catastrophizing are important factors in understanding AEE and its health implications.

## Keywords

ambivalence over emotional expression, catastrophizing, depressive symptoms, pain, self-determination theory

A growing number of studies have suggested that ambivalence over emotional expression is related to both psychological and physical symptoms. Ambivalence over emotional expression (AEE) is defined as the inner conflict of expressing emotions due to an individual's conscious desire to express but failing to do so (King and Emmons, 1990). AEE has been demonstrated to be associated with pain in patients with chronic lower back pain (Carson et al., 2007), chronic pelvic pain (Norman et al., 2004), rheumatoid arthritis (e.g. Kelley et al., 1997; Tucker et al., 1999), and cancer patients (Porter et al., 2005; Servaes et al., 1999). AEE has also been reported to be related to higher levels of depressive symptoms (Katz and

Campbell, 1994; King and Emmons, 1990; Krause et al., 2003; Tucker et al., 1999). Despite the increasing evidence of the association between AEE, pain, and depressive symptoms, little research has been conducted to understand why AEE is associated with both pain and depressive symptoms. The goal of the current study is to test potential mediators of these associations. As depression is often co-morbid with pain (Banks and Kerns, 1996), examining

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pain and depression at the same time may reveal common process linking AEE and negative outcomes.

King and Emmons (1990) argued that goal conflict underlining ambivalence over emotional expression was the key for maladjustment. When personal goals are in conflict with social norms or with other goals, an individual may experience the detrimental effects of psychosomatic reaction. The key focus of AEE on desire and goal conflict indicates that the study of health effect of AEE will benefit from a motivational theoretical framework. Self-determination theory (Deci and Ryan, 2000), a widely used motivation theory, proposes that individuals have basic psychological needs (competence, autonomy, and relatedness) that are essential for well-being. Competence refers to having an effect on the environment as well as to attain valued outcomes within it. Autonomy involves determining one's own behavior and engaging in behaviors that are volitional and consistent with one's sense of self. Relatedness refers to feeling genuinely connected to others and having a sense of belongingness. Several studies utilizing self-determination theory demonstrated that when people's needs are not satisfied, they have worse health (Deci and Ryan, 2000). Past research also suggests that when people tend to conceal information about themselves, their basic needs are thwarted, which then leads to ill-being (Uysal et al., 2010). Similarly, we argue that when people have the desire of expressing their emotions but cannot freely do so, their basic needs are not satisfied, and unfulfilled needs in turn lead to maladjustment, in this case, pain and depressive symptoms.

The second mediator that we planned to test was catastrophizing, which was found to be related to pain (Sullivan et al., 2000) and depressive symptoms (Keefe et al., 1989) in previous research. According to the communal coping model of catastrophizing (Sullivan et al., 2000), catastrophizers may engage in exaggerated pain expression to maximize proximity or to solicit assistance or empathic responses from others in their social environment. When individuals with

AEE fail to express their emotions, their desire to express distress may motivate them to express it somatically, and thus they communicate their distress to others through exaggerated pain expression rather than emotion expression. A prior study (Porter et al., 2005) supported the idea that catastrophizing mediated the effects of AEE on pain behavior but did not test depressive symptoms as an outcome. However, there are reasons to believe that the effect of AEE on depressive symptoms might also be mediated by catastrophizing, a negative tendency to evaluate threat (Sullivan et al., 2000). As disclosing emotions facilitate individuals to better understand stressors and to find successful resolutions (Lu and Stanton, 2010), those with higher AEE may have less chance to fully understand their stressors and may negatively evaluate their ability to deal with threat, which in turn may lead to depression.

Accordingly, we hypothesized that: (1) AEE would be associated with higher levels of pain and depressive symptoms; (2) higher levels of AEE would be associated with lower levels of need satisfaction, which in turn would be associated with higher level of pain and depressive symptoms; and (3) higher levels of AEE would be associated with higher levels of catastrophizing, which in turn would be associated with higher level of pain and depressive symptoms.

## **Method**

### *Participants and procedure*

Participants were recruited from undergraduate students in the participant pool of a large state university. The study was approved by the Institutional Review Board of the university. Participants completed an anonymous online survey and received extra course credit in return. Participation was voluntary and all participants agreed to an informed consent before taking the survey. A total of 255 students participated in the study. Four participants who had extreme outlier scores were dropped ( $z$  score  $> 3$ ), thus 251 participants were included in the

analyses. The sample had a mean age of 21.85 (SD = 5.30), consisted mostly of females (78%), and was ethnically diverse (24.7% Asian, 18.7% African, 25.1% Caucasian, 26.7% Hispanic, and 4.4% other).

## Measures

**Ambivalence over emotional expression (AEE).** AEE was measured by the Ambivalence Over Emotional Expression Questionnaire (AEO) (King and Emmons, 1990), which consists of 28 items that participants rate from 1 (never) to 5 (frequently). The items of the scale measure ambivalence over expression of different emotions ('I want to tell someone when I love them, but it is difficult to find the right words', 'I feel guilty after I have expressed anger to someone'). The internal reliability was high ( $\alpha = .89$ ) and the scale was shown to be predictive of psychological ill-being (King and Emmons, 1990).

**Depressive symptoms.** Depressive symptoms were measured by the depression subscale of the Brief Symptoms Inventory (BSI) (Derogatis, 2000). The depression subscale measures the extent to which one has experienced depressive symptoms (e.g. feeling blue, feeling no interest in things) during the last week, using a scale of 0 (not at all) to 4 (extremely). Internal reliability was .85.

**Self-reported pain.** General level of pain was measured by the short form of McGill Pain Questionnaire (SF MPQ) (Dworkin et al., 2009; Melzack, 1987). The revised version of SF MPQ consists of 22 items and measures the intensity of different kinds of pain and related symptoms (e.g. throbbing pain, hot-burning pain). Participants rate items on a 0 (none) to 10 (worst possible) scale considering how they felt during the past week. The original SF MPQ is shown to be valid and reliable (Grafton et al., 2005; Melzack, 1987). The revised version added seven more items to include neuropathic pain and related symptoms. The internal reliability of the revised version ranged from .91 to

.95 (Dworkin et al., 2009). In this study, the internal reliability was .92.

**General need satisfaction.** Need satisfaction was measured by the 21-item General Need Satisfaction Scale (Deci and Ryan, 2000), which includes three subscales measuring satisfaction of autonomy, competence, and relatedness in the general domain of everyday life. Each subscale consists of seven items. Respondents rate statements such as 'I feel like I am free to decide for myself how to live my life', 'Most days I feel a sense of accomplishment from what I do', and 'People in my life care about me' on a scale of 1 (strongly disagree) to 7 (strongly agree). Each need can be scored separately, or the items can be combined into a general need satisfaction score. Internal reliability was .88 for the general need satisfaction scale. Reliabilities for autonomy, competence, and relatedness subscales were .71, .75, and .79 respectively.

**Pain catastrophizing.** Pain catastrophizing was measured by the Pain Catastrophizing Scale (Sullivan et al., 1995). The scale consists of 13 items that measure catastrophic thinking about pain. It has three subscales: rumination (e.g. 'I keep thinking about how badly I want the pain to stop'); helplessness (e.g. 'It's terrible and I think it's never going to get any better'); and magnification (e.g. 'I become afraid that the pain may get worse'). Participants rate the items on a 1 (Not at all) to 5 (All the time) scale. The scale has been shown to be reliable and valid in various studies (Osman et al., 2000; Sullivan et al., 1995, 2000). Internal reliability was .96. Reliabilities for rumination, helplessness, and magnification subscales were .93, .92, and .83, respectively.

## Analysis plan

Initially, bivariate correlations were examined with all the variables of interests. To test the mediation hypotheses, we conducted a path analysis model using Mplus software (Muthen and Muthen, 2010). In the path model, AEE

**Table 1.** Correlations and Descriptive Statistics

	1	2	3	4	5
1. AEE	–				
2. Catastrophizing	.40*	–			
3. Need satisfaction	–.52*	–.28*	–		
4. McGill – Pain	.24*	.43*	–.12 <sup>a</sup>	–	
5. Depressive symptoms	.61*	.41*	–.57*	.23*	–
Mean	2.73	2.17	5.05	1.59	.94
SD	.77	.99	.77	1.46	.86

Notes: Zero order correlations are reported below the diagonal

\* $p < .001$

<sup>a</sup> $p < .07$

was entered as the predictor variable, need satisfaction, and pain catastrophizing as the mediators, and pain and depressive symptoms as the outcome variables.

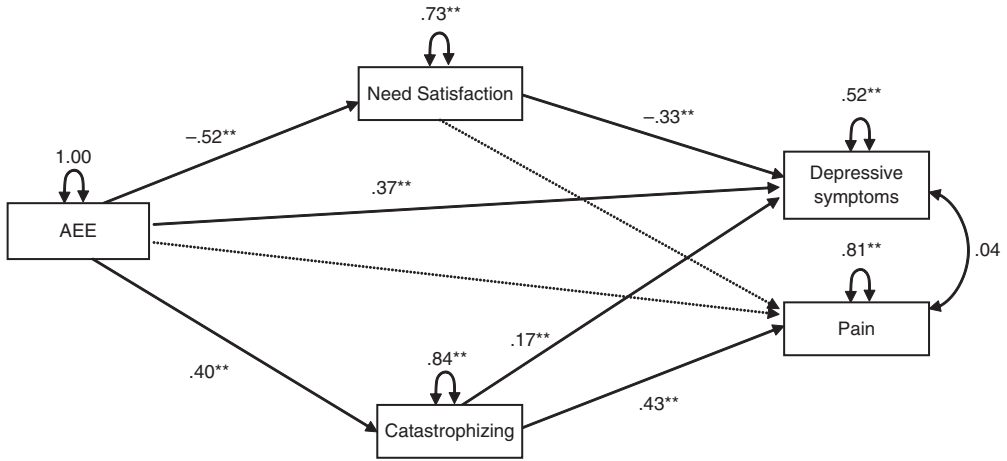
## Results

Table 1 provides the means and bivariate correlations for each of the measures. These analyses revealed that ambivalence over emotional expression (AEE) was positively associated with both pain ( $r = .24, p < .001$ ) and depressive symptoms ( $r = .61, p < .001$ ). AEE was negatively associated with need satisfaction ( $r = -.52, p < .001$ ) and positively associated with catastrophizing ( $r = .40, p < .001$ ). Catastrophizing was positively associated with both pain ( $r = .43, p < .001$ ) and depressive symptoms ( $r = .41, p < .001$ ). Need satisfaction was negatively associated with depressive symptoms ( $r = -.57, p < .001$ ) and marginally significantly associated with pain ( $r = -.12, p = .07$ ). These findings, except the non-significant association between need satisfaction and pain, were in line with our hypotheses.

Next, we tested the mediation model which is presented in Fig. 1. The path between need satisfaction and pain was dropped from the model as there was no significant association between need satisfaction and pain. Results showed that the model had a good fit  $\chi^2(3) = 4.39, p = .22$ , RMSEA = .04, SRMR = .03, CFI = .99, TLI = .99. Higher AEE was associated with lower need satisfaction ( $\beta = -.52, p < .001$ ), which

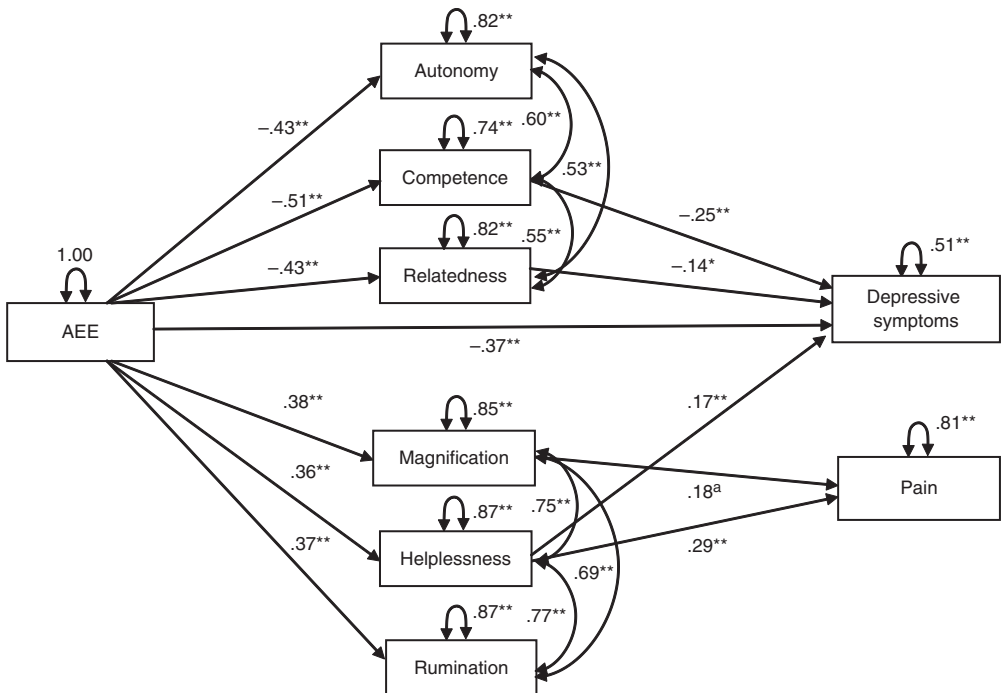
predicted higher depressive symptoms ( $\beta = -.33, p < .001$ ). Similarly high AEE was associated with higher catastrophizing ( $\beta = .40, p < .001$ ), which in turn predicted pain ( $\beta = .43, p < .001$ ) and depressive symptoms ( $\beta = .17, p < .001$ ). Furthermore, AEE also had a direct effect on depressive symptoms ( $\beta = .37, p < .001$ ), but not on pain. In other words, the effect of AEE on pain was fully mediated by pain catastrophizing, whereas the effect of AEE on depressive symptoms was partially mediated by need satisfaction and pain catastrophizing. The model explained 48 percent of the variance in depressive symptoms, and 19 percent of the variance in pain. In brief, the findings supported our hypotheses with the exception that need satisfaction did not mediate the association between AEE and pain.

As both mediators need satisfaction and catastrophizing have three dimensions, we further explored which of the dimensions would mediate the relationship between AEE and outcomes (Fig. 2). The final model had a good fit,  $\chi^2(18) = 25.59, p = .17$ , RMSEA = .04, SRMR = .04, CFI = .99, TLI = .99. Among need satisfaction dimensions, competence and relatedness mediated the relationship between AEE and depressive symptoms. Among catastrophizing dimensions, helplessness mediated the relationship between AEE and depressive symptoms. The association between AEE and pain was mainly mediated by helplessness but the mediating role of magnification was also marginally significant ( $\beta = .18, p < .06$ ).



**Figure 1.** Ambivalence over Emotion Expression Predicting Depressive Symptoms and Pain with Catastrophizing and Need Satisfaction as Mediators.

Notes: The dotted paths were hypothesized initially but they were dropped from the model  
 \*\* $p < .001$



**Figure 2.** Mediation Model with the Subscales.

\* $p < .05$ , \*\* $p < .001$ , <sup>a</sup> $p < .06$

## Discussion

The current study revealed that a high level of ambivalence over emotional expression (AEE) was associated with increased pain and depressive symptoms. Catastrophizing was found to fully mediate the relationship between ambivalence over emotional expression and pain. Catastrophizing and need satisfaction also mediated the relationship between ambivalence over emotional expression and depressive symptoms.

The study contributes to our understanding of why AEE is linked to pain and depressive symptoms. Porter et al. (2005) found that chronic pain patients' catastrophizing partially explained the effects of ambivalence over emotional expression on pain behavior, energy/fatigue, and emotional well-being; however, depressive symptoms were not assessed and AEE was not related to self-reported pain. Thus the authors were not able to test the mediating relationship hypothesized in the current study. Our findings provided new evidence and demonstrated that AEE was associated with self-reported pain, and that pain catastrophizing fully mediated the relationship between ambivalence over emotional expression and self-reported pain. These results not only provided support for the communal coping model and interpersonal process of catastrophizing (Sullivan et al., 2001) but also illustrated what personal attributes might put individuals at risk for catastrophizing. The results further revealed that helplessness and magnification dimensions of catastrophizing mediated the relationship between AEE and pain. Individuals with higher levels of AEE may feel hopeless about their psychological distress, tend to somatize emotional distress, and exaggerate the symptoms in order to seek help from others, as this is a more acceptable way of expressing distress. When emotional distress is somatized in pain, the exaggeration of pain symptoms inadvertently results in heightened pain (Sullivan et al., 2001). Future studies that assess pain somatization and seeking social support may help further elucidate the process linking AEE with pain.

Although the communal model of catastrophizing did not specify the relationship between catastrophizing and depressive symptoms, our findings suggested that ambivalence over emotional expression was negatively associated with depressive symptoms partly due to catastrophizing. The results further revealed that the helplessness dimension of catastrophizing mediated the association between AEE and depressive symptoms.

It was also found that need satisfaction partially explained the relationship between ambivalence over emotional expression and depressive symptoms. The idea that unfulfilled psychological needs lead to lower psychological well-being is a basic assumption of self-determination theory (Deci and Ryan, 2000). Past research has consistently shown that when psychological needs are unfulfilled negative psychological outcomes follow. Based on these findings, the present study suggests that ambivalence over emotional expression is negatively associated with depressive symptoms partly because it is detrimental to need satisfaction. The results further revealed that the competence and relatedness dimensions of need satisfaction mediated the relationship between AEE and depressive symptoms. Inability to articulate one's feelings may undermine a sense of competence over one's environment, and negatively affect the quality of relatedness with others. These unsatisfied needs then predict depressive symptoms. As need satisfaction and catastrophizing partially mediate the link between AEE and depressive symptoms, it remains to be seen what else might contribute to this relationship which warrants future research.

Our analyses revealed that need satisfaction was only marginally associated with pain and did not mediate the link between AEE and pain. However, the effect of ambivalence over emotional expression on pain was fully mediated by pain catastrophizing. Pain catastrophizing is a more proximal construct to pain, and when both basic need satisfaction and pain catastrophizing were entered as mediators, catastrophizing seemed to mediate all the effect of ambivalence



over emotion expression on pain. Alternatively, basic need satisfaction may play a larger role as a mediator in chronic pain situations. That is, lack of need satisfaction may not initiate pain, but could be an important factor that sustains already existent pain. Future studies that examine the role of need satisfaction in a sample of chronic pain patients can provide more information on this issue. Furthermore, self-determination theory is a theory of motivation (Deci and Ryan, 2000), hence, basic need satisfaction might be a better predictor of pain behaviors and behavior change. In fact, in one study with chest pain patients it was found that autonomy was positively related to diet improvement and exercise over a three year period (Williams et al., 2005). Although we did not have any behavioral outcomes, basic need satisfaction could be a significant mediator of ambivalence over emotion expression and pain-related behaviors.

The findings of this study have implications for clinical practice and future studies. Consistent with previous studies (Tucker et al., 1999), our study suggests that those who experience ambivalence over emotional expression may have elevated experience of depressive symptoms and pain. Thus it may be useful for clinicians who work with pain patients to observe and assess for ambivalence over emotional expression during clinical interviews and to inform more targeted pain management. It would be fruitful to design and evaluate pain management strategies specifically targeted at reducing ambivalence over emotional expression with the ultimate goal to reduce pain and depression. As patients with emotional ambivalence might also catastrophize or have unsatisfied needs, interventions targeted at reducing emotional ambivalence might also reduce catastrophizing or improve need satisfaction. Interventions with multiple components that target emotion regulation, minimizing catastrophizing, and attending to unsatisfied needs, may maximize treatment benefits.

In studies examining the effectiveness of written disclosure interventions, individuals with high levels of ambivalence benefited more

from written disclosures compared with those with low levels of ambivalence in reducing physical symptoms, negative affect, and pain related disability (Lu and Stanton, 2010; Norman et al., 2004). Future research is needed to understand whether these interventions exert their effects through improving need satisfaction and reducing catastrophizing. AEE has also been linked to other negative outcomes such as lower self-esteem, higher interpersonal sensitivity (King and Emmons, 1990), and lower marital satisfaction (King, 1993). The examination of need satisfaction and catastrophizing as mediators might be useful to understand the association between AEE and these negative outcomes.

Some limitations of this study should also be noted. First, the current study was cross-sectional in nature, and the suggested causal directions were theoretical, based on past research. However, alternative models with different causal directions are also possible. For future research, experimental or longitudinal designs are called for so that causal inferences may be established. Second, we had conceptualized pain catastrophizing as an interpersonal process based on the communal model of coping. However, none of the items of the pain catastrophizing measure used in the current study directly measured interpersonal processes. Future studies could enrich the literature by illustrating the exact interpersonal processes involved. Studies including couples may provide more insight on this issue. Finally, although our relatively healthy sample allows us to examine phenomena that are not confounded by the severity of pain conditions most often seen in chronic pain samples, the generalizability of the findings are limited. Samples with clinical pain should be utilized in the future to increase the external validity of the findings.

In summary, our findings in a healthy sample add to our knowledge of ambivalence over emotional expression, pain and depressive symptoms in several ways. The study provides an explanation of why ambivalence over emotional expression may be related to pain and



depressive symptoms. AEE is associated with increased reports of pain and depressive symptoms through catastrophizing and unfulfilled basic psychological needs. Findings suggest that need satisfaction and catastrophizing are important factors in understanding AEE and its health implications. Both intrapersonal and interpersonal process and motivational framework may be useful approaches to examine the association between AEE and maladjustment. Future studies should be replicated with chronic pain populations. Findings revealed from this line of research may help clinicians with assessing and managing emotion regulation factors that contribute to the pain and depression.

### Competing Interests

None declared.

### Acknowledgements

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