Comparisons of Catastrophizing, Pain Attitudes, and Cold-Pressor Pain Experience Between Chinese and European Canadian Young Adults

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Abstract: Experimental pain research indicates ethnic differences in pain experience. Most of the cross-cultural pain research studied African Americans and Hispanics with little data available for Asian groups. This study examined differences in pain catastrophizing, pain attitudes, and pain responses between Chinese and European Canadian young adults. Prior to completing a cold-pressor (CP) task, 80 Chinese and 80 European Canadian undergraduate students were administered measures of pain catastrophizing and pain attitudes, including stoicism and cautiousness. Pain threshold, pain tolerance, and pain intensity were measured during the CP task. The Short Form-McGill Pain Questionnaire was administered immediately postimmersion to measure sensory and affective pain. While there was no group difference in pain threshold and pain intensity, Chinese participants displayed lower pain tolerance and reported higher SF-MPQ-Affective than European Canadians. Regarding psychological variables, there was no difference in stoicism and cautiousness between groups, but Chinese participants reported greater pain catastrophizing. Mediational analysis indicated that pain catastrophizing mediated the group differences in SF-MPQ-Affective score. The implications of the findings and future research were discussed.

Perspective: The study found ethnic differences in cold-pressor responses, in which Chinese undergraduates reported higher levels of pain compared to their Euro-Canadian counterparts. The finding that pain catastrophizing mediated the ethnic difference in SF-MPQ-Affective scores indicated the importance of examining the role of catastrophizing in pain reports from Chinese and Euro-Canadian patients.

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Key words: Experimental pain, ethnicity, catastrophizing, Chinese, pain attitudes.
have controlled for depression when examining catastrophizing, which is now a standard in the field. Indeed, to date, relatively few studies have examined how cognitive-appraisal pain factors may vary across ethnicities and pain outcomes.

What may be most surprising in ethnicity and pain research is that very little experimental work has involved Chinese samples, especially considering that the Chinese are one of the most populous ethnicities worldwide. Chinese society is influenced by Confucianism, which encourages stoicism. Stoicism is a term that refers to repression of emotion or indifference to pain, and it is considered a positive trait for the Chinese, who believe that the expression of pain is a sign of weakness. Despite the prevalent view that Chinese may be more emotionally stoic and thus may report less pain compared to North Americans, the limited evidence suggests the opposite. For example, Knox et al compared 12 Chinese and 12 North Americans in responses to cold-pressor pain, with the Chinese reporting greater pain and distress. Similarly, Woodrow et al demonstrated that Chinese and Japanese participants had lower pain tolerances than Europeans in an experiment involving mechanical pressure on the Achilles tendon. However, these earlier studies can be criticized for their small sample sizes and the inadequate control of confounds such as age, health conditions, and psychological factors. In reviewing the pain research involving Chinese participants, there have been some clinical studies in recent years. However, there is a paucity of research comparing experimental and clinical pain between Chinese and other ethnic groups. To the best of our knowledge, there is no study in the recent decade that compared experimental pain responses between Chinese and Caucasians. Further, although catastrophizing has ethnic variability, no research has examined how catastrophizing may influence experimental pain reports for the Chinese.

The present study examined experimental pain responses in healthy Chinese and European Canadian undergraduate students in Canada. The primary objective for this study was to examine differences in pain reports, pain catastrophizing, and pain attitudes between the Chinese and European Canadians. Depressive symptoms were also investigated, as depression has been suggested to have reliable effects on pain experience. Depression would be included as a potential covariate if ethnic groups differed significantly on depression. Secondly, in the event of group differences for pain, an examination of possible mediational roles for pain catastrophizing and pain attitudes was considered.

**Methods**

**Participants**

Eighty Chinese (41 females) and 80 European Canadian (42 females) undergraduate students participated in the study. Ages of participants ranged from 17 to 27 (M = 20.01 years, SD = 2.07 years). The length of time that Chinese participants had lived in Canada ranged from 1 month to 7 years (M = 3.85 years, SD = 2.2 years). Participants in the European Canadian group were all born and raised in Canada. All participants were University full-time students. Participants who were enrolled in the introductory psychology course received a bonus course credit for their participation. All other participants received $10 cash as compensation for their time. Potential participants who had reported pain lasting more than 3 months, or whose pain symptoms might be exacerbated by exposure to cold and pain-provoking stimuli, were excluded from the study. Participants who had reported previous frostbite on their nondominant hand were also excluded.

**Materials and Measures**

**Cold-Pressor (CP) Machine**

Acute pain was induced using a CP machine, which is a recirculating, double-bucket system with a built-in refrigeration unit. The temperature of the water was kept constant at 2 to 3°C by an internal thermostat. A Fisher Scientific thermometer (Fisher Scientific, Pittsburgh, PA) was used to verify water temperature and to calibrate temperature settings. The CP machine consisted of a 22 × 29-inch outer casing that houses a 10 × 12-inch bucket which was filled to the brim with water.

**Depression**

Depressive symptoms were assessed using the Centre for Epidemiological Studies Depression Scale (CES-D), which inquires about depressive symptoms within the last week. Response options on the CES-D are rated on a 4-point Likert scale (0 = “rarely”, 3 = “most of the time”). The scale consists of 20 items and the score ranges from 0 to 60, with a higher score indicating more symptoms of depression. In the present study, the Cronbach’s alpha was .90 for the Euro-Canadians, and .82 for the Chinese.

**Pain Catastrophizing**

The Pain Catastrophizing Scale (PCS) is a 13-item self-report measure of pain catastrophizing assessing negative thoughts associated with pain. The PCS measures 3 dimensions of catastrophizing: rumination, magnification, and helplessness. Participants reflect on past painful experiences and rate their feelings of pain on a 5-point Likert scale (0 = “not at all”, 4 = “all the time”). PCS scores range from 0 to 52, where higher scores indicate more pain catastrophizing. In the present study, the Cronbach’s alphas for the Euro-Canadians were: Full scale = .88, Helplessness = .79, Magnification = .60, Rumination = .84. For the Chinese, the alphas were: Full scale = .92, Helplessness = .88, Magnification = .73, Rumination = .86.

**Pain Attitudes (PAQ-R)**

The Pain Attitudes Questionnaire—Revised (PAQ-R) is a 24-item self-report measure for assessing pain-related attitudes such as stoicism and cautiousness. This scale is reliable and valid for the chronic-pain population as well as healthy community-dwelling adults, across...
different age groups.\textsuperscript{62,63} Response options on the PAQ-R are rated on a 5-point Likert scale that has scores ranging from 24 to 120, with higher scores suggesting more stoicism and cautiousness toward pain. Items were generated based on a review of literature of the constructs on stoicism and cautiousness.\textsuperscript{63} Stoicism refers to reluctance to express pain and tolerance of pain (eg, go on as if nothing has happened, keep pain to self, can endure more pain than others), whereas cautiousness refers to a lack of confidence in themselves to make judgments of pain sensations or a reluctance to label a sensation as painful (eg, need time to decide, reluctant to label pain). For the current study, the Cronbach's alphas for the Euro-Canadians were: Full scale = .88, Cautiousness = .85, Stoicism = .87. For the Chinese, the alphas were: Full scale = .86, Cautiousness = .79, Stoicism = .86.

Pain Threshold

Pain threshold was determined by asking participants to raise their dominant hand (ie, the one not immersed in the CP) the moment they began to feel any pain or discomfort. The time, in seconds, that passed between the immersion and the raising of the hand was recorded as the pain threshold.

Pain Tolerance

Pain tolerance is the total time, in seconds, that the participant's arm was immersed in the water minus his or her pain-threshold time. In the present study, the tolerance time had an imposed ceiling time of 180 seconds,\textsuperscript{26} which was not revealed to the participants until after the experiment.

Pain Intensity

Participants rated the intensity of their pain during the CP task on a Numerical Rating Scale (NRS). In the present study, an 11-point NRS was used with 0 labeled as "no pain" and 10 as "extreme pain." Participants were prompted to rate the intensity of the CP pain after the first 5 seconds, then at 15-second intervals until they removed their hand or until they reached the ceiling time. All of the NRS ratings were then averaged for each participant to give a global pain-intensity score.

Short Form-McGill Pain Questionnaire

The emotional and sensory components of pain were assessed using the Short-Form McGill Pain Questionnaire (SF-MPQ).\textsuperscript{35} This measure consists of 15 descriptors which required participants to reflect on their current pain experience and rank each descriptor on an intensity scale. Response options on the SF-MPQ are rated on a 4-point Likert scale and its scores range from 0 (no pain) to a total maximum of 45. In the present study, the Cronbach's alphas for the Euro-Canadians were: Full scale = .78, Affective = .71, Sensory = .74. For the Chinese, the alphas were: Full scale = .77, Affective = .72, Sensory = .71.

Procedure

Ethics approval was obtained from the General Research Ethics Board at Queen's University, Canada. Participants were recruited from undergraduate psychology classes at the University as well as through advertisements posted on the campus. Prior to participation, the temperature of the CP was gauged at 2 to 3°C, participants were instructed on the general purpose of the study, any questions from the participant were addressed, and informed consent was obtained. Subsequently, participants completed the study measures (ie, demographics, CES-D, PAQ-R, PCS) in random order. Following the completion of these questionnaires, participants were introduced to the CP and were seated on the side of the CP that allowed their nondominant arm to be immersed in the water. All participants were read a script to ensure the standardization of the experimental protocol that instructed participants to first fully immerse their nondominant arm up to the elbow in a bucket of water maintained at room temperature for 60 seconds. This step was done to stabilize skin temperature. One minute later, participants then immersed the same arm in the CP machine. Participants were asked to raise their nonimmersed hand as soon as they started feeling any discomfort for threshold recording. Participants were prompted to report their pain rating on a scale of 0 to 10, 5 seconds after immersion in the cold water and every 15 seconds thereafter until the withdrawal of the hand or the ceiling time of 180 seconds. Before the CP task began, the experimenter reviewed the instructions again. The script was as follows:

"Here is a quick summary: In a while I'll ask you to put your hand all the way to the bottom of the water tank with fingers spread apart. After you put your hand in the water, I want you to raise the other hand as soon as you start to feel any pain. When you hear the word 'report,' say a number on this pain scale that best describes how you are feeling. Remember to keep your hand in for as long as you can or until I tell you to take it out. You can stop the experiment anytime by withdrawing your hand."

Immediately after the CP task, participants completed the SF-MPQ reporting the current pain experience. A thorough debriefing was conducted following the completion of the study.

Data Analyses

Descriptive statistics were computed, normality of each variable was assessed, and the significance of group differences on continuous variables was calculated by t-tests. The distributions for pain threshold and pain tolerance were found to be skewed. Square-root transformation was conducted to normalize the distribution for pain threshold. Mann-Whitney U was used to test group difference in pain tolerance because pain tolerance had a bimodal distribution, which would render transformation ineffective. The significance of these results was not different from the original results and thus untransformed and parametric results were retained. Type I error was controlled using Bonferroni correction by setting the \( P \) value <.006 (.05 divided by
Results

Ethnic Group Differences

Table 1 shows the demographics, group means, standard deviations, and P-values for each psychological measure and their subscales. The T-test indicated no significant differences in age between the 2 ethnic groups. Chi-square also indicated that the gender ratio was not significant between the groups.

Pain Catastrophizing

The T-test revealed no significant difference in CES-D scores between the 2 ethnic groups, \( P = .30 \).

Depression

The T-test revealed no significant difference in CES-D scores between the 2 ethnic groups, \( P = .30 \).

Table 2. Means and Standard Deviations of Pain Measures by Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>CHINESE (N = 80)</th>
<th>EUROPEAN CANADIAN (N = 80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Age (years)</td>
<td>20.13</td>
<td>1.99</td>
</tr>
<tr>
<td>Sex (% female)</td>
<td>51.25</td>
<td>52.50</td>
</tr>
<tr>
<td>CES-D</td>
<td>10.93</td>
<td>5.62</td>
</tr>
<tr>
<td>PCS total</td>
<td>19.14</td>
<td>10.40</td>
</tr>
<tr>
<td>Helplessness</td>
<td>7.56</td>
<td>5.01</td>
</tr>
<tr>
<td>Magnification</td>
<td>3.99</td>
<td>2.91</td>
</tr>
<tr>
<td>Rumination</td>
<td>7.59</td>
<td>4.03</td>
</tr>
<tr>
<td>PAQ-R total</td>
<td>71.67</td>
<td>12.19</td>
</tr>
<tr>
<td>Cautiousness total</td>
<td>27.73</td>
<td>5.94</td>
</tr>
<tr>
<td>Stoicism total</td>
<td>43.94</td>
<td>9.02</td>
</tr>
</tbody>
</table>

Abbreviations: PAQ-R, Pain Attitudes Questionnaire-Revised; PCS, Pain Catastrophizing Scale.

*pSignificant after Bonferroni’s correction \( P < .006 \).

Correlations Between Variables

The partial correlations (controlling for ethnicity) between pain and psychological variables are shown in Table 3. PCS subscales were not included in the table because they were all associated with ethnic differences and were highly associated with each other (.6–.8). Notable correlations indicate that as catastrophizing increases so does SF-MPQ, but there were no significant associations with pain threshold, pain tolerance, and pain intensity.

Analysis of the Mediation Effect of Pain Catastrophizing

As shown in Table 2, only the Affective subscale of SF-MPQ scale was significantly different between the ethnic groups. Catastrophizing was also associated with participants, \( t(158) = -4.23, P < .001 \). Subscales analyses showed that the Chinese scored higher than the Euro-Canadians on each of the 3 subscales: helplessness \( t(158) = -4.46, P < .001 \), magnification \( t(158) = -3.41, P = .001 \), and rumination \( t(158) = -2.93, P = .004 \).
ethnicity, qualifying catastrophizing in a meditational model with SF-MPQ-Affective and ethnicity. Pain attitudes were not qualified for meditational analysis because they were not significantly different between the groups.

Table 4 shows the mediation effect of catastrophizing on ethnicity and SF-MPQ-Affective. Fig 1 illustrates this mediation model. Ethnicity significantly predicted SF-MPQ-Affective, \( \beta = .30, P < .001 \). As shown in Table 4, the \( \beta \) weight for ethnicity dropped to \( .22 \) when including pain catastrophizing in the model. Sobel’s test\(^{45}\) showed that this decline was a significant change (\( z = 2.40, P = .02 \)). This result indicated that ethnic differences in SF-MPQ-Affective pain are mediated through catastrophizing.

Discussion

The objective of the current study was to investigate differences in pain responses to cold-pressor pain, catastrophizing, and pain attitudes in a sample of healthy Chinese and European Canadian university students. Chinese participants displayed lower pain tolerance and reported greater SF-MPQ-Affective score and pain catastrophizing. The ethnic difference in pain intensity was not significant after Bonferroni correction.

Researchers have proposed that pain tolerance and suprathreshold ratings of pain unpleasantness reflect affective-motivational aspects of pain, whereas pain-threshold and suprathreshold ratings of pain intensity reflect the sensory-discriminative aspects of pain.\(^{23,24,39}\) Similarly, Main and Spanswick\(^{34}\) suggested that sensory-discriminative aspects of pain are those that describe the location, intensity, and duration of painful stimuli, while affective-motivational aspects of pain describe how pain is qualitatively experienced. Further, it is theorized that ethnic differences in pain responses may be most apparent for the affective-motivational dimension of pain because it is more influenced by psychosocial factors than the sensory-discriminative aspects of pain.\(^{14,41,44}\) Our findings that Chinese participants displayed lower pain tolerance and reported greater SF-MPQ-Affective score and pain catastrophizing seemed to be consistent with previous findings of ethnic differences in experimental pain.\(^{5,11-13,15}\)

The present study also demonstrated that pain catastrophizing was positively associated with both SF-MPQ-Sensory and Affective scores, but it was not significantly correlated with pain-threshold, pain-tolerance, and pain-intensity ratings. The pain literature is somewhat inconsistent in describing the association of catastrophizing to pain outcomes. While pain catastrophizing does predict sensory-based pain reports during cold-pressor tasks,\(^{17,47,50}\) other research shows that catastrophizing correlates more strongly with the qualitative component of pain but less or not at all with the sensory component assessed by threshold and numerical pain-intensity ratings. For example, studies using cold-pressor tasks have found that pain catastrophizing is not associated with pain threshold, pain tolerance,

![Figure 1](https://example.com/figure1.png)

**Figure 1.** Catastrophizing as a mediator of ethnic difference in SF-MPQ-Affective pain. The coefficients are standardized regression weights. The coefficients in parentheses represent the beta weights computed after the mediator has been included in the regression equation. Ethnicity coded: 0 = European Canadian, 1 = Chinese. *\( P < .001 \); **\( P < .01 \).

### Table 3. Partial Correlations (Controlling for Ethnicity) Between Variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CESD</td>
<td>–</td>
<td></td>
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<tr>
<td>2. PAQ-S</td>
<td>.04</td>
<td>–</td>
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<td></td>
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<tr>
<td>3. PAQ-C</td>
<td>.25(^1)</td>
<td>.36(^1)</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. PCS</td>
<td>.26(^1)</td>
<td>– .40(^1)</td>
<td>.08</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Pain Threshold</td>
<td>– .10</td>
<td>– .02</td>
<td>.07</td>
<td>.11</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Pain Tolerance</td>
<td>– .03</td>
<td>.28(^1)</td>
<td>.21(^*)</td>
<td>.04</td>
<td>.05</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Pain NRS</td>
<td>– .02</td>
<td>– .18(^*)</td>
<td>– .23(^1)</td>
<td>.06</td>
<td>– .41(^1)</td>
<td>– .17(^*)</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. SFMPQ-Sensory</td>
<td>.04</td>
<td>– .25(^1)</td>
<td>– .1</td>
<td>.23(^1)</td>
<td>– .19(^*)</td>
<td>– .17(^*)</td>
<td>.33(^1)</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>9. SFMPQ-Affective</td>
<td>.01</td>
<td>– .16</td>
<td>– .13</td>
<td>.21(^1)</td>
<td>– .05</td>
<td>– .16(^*)</td>
<td>.20(^*)</td>
<td>.47(^*)</td>
<td>–</td>
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</tbody>
</table>

\(^*P < .05.\)  
\(\dagger P < .01.\)  
\(\ddagger P < .005.\)

### Table 4. Summary of Regression Analysis for PCS as a Mediator Between Ethnicity and SF-MPQ-Affective (N = 160)

<table>
<thead>
<tr>
<th>PREDICTOR VARIABLE</th>
<th>CRITERION VARIABLE</th>
<th>B</th>
<th>SE</th>
<th>( \beta )</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Ethnicity</td>
<td>PCS</td>
<td>5.99</td>
<td>1.41</td>
<td>.32(^*)</td>
<td>4.23</td>
</tr>
<tr>
<td>Model 2 Ethnicity</td>
<td>SF-MPQ-Affective</td>
<td>1.50</td>
<td>.38</td>
<td>.30(^*)</td>
<td>3.94</td>
</tr>
<tr>
<td>Model 3 Ethnicity</td>
<td>SF-MPQ-Affective</td>
<td>1.13</td>
<td>.39</td>
<td>.22(^1)</td>
<td>2.89</td>
</tr>
<tr>
<td></td>
<td>PCS</td>
<td>.06</td>
<td>.02</td>
<td>.23(^1)</td>
<td>2.94</td>
</tr>
</tbody>
</table>

\(^*P < .001.\)  
\(\dagger P < .01.\)  
\(\ddagger P < .005.\)
or pain intensity, but is associated with clinical pain reports. The finding of significant correlations between pain catastrophizing and the SF-MPQ, which represents the qualitative dimension of pain, appear to be consistent with parts of the recent literature regarding catastrophizing.

One of the most important findings in this study was that pain catastrophizing mediated the ethnic differences found for cold pressor SF-MPQ-Affective scores, suggesting that catastrophizing accounted for the ethnic difference found in the affective-motivational aspects of pain. However, the ethnic difference in catastrophizing did not account for other pain responses, particularly the substantially lower pain tolerance observed among the Chinese participants. An explanation for this is that perhaps the cold pressor pain was not threatening enough to elicit avoidance behavior from pain catastrophizing. Gracely et al have suggested that the use of low-threat pain stimuli commonly found in experimental studies may weaken the influence of catastrophizing on pain response. Other potential contributors to ethnic differences in pain, such as fear of pain or communication and interpersonal factors, were not assessed in this study and should be examined in the future.

Contrary to the prevalent view that the Chinese are expected to be stoic in response to pain, there was no difference in stoicism attitude between healthy Chinese and European Canadian young adults in this study. On the stoicism subscale of PAQ-R, the difference between the 2 groups was not significant. The present finding suggests that while the Chinese culture (eg, Confucianism) emphasizes the inhibition of emotions as an adaptive coping strategy and as a positive trait, this attitude may not be generalized to acute pain situations. At least with experimentally induced pain, the stereotypically stoic Chinese cannot be generalized to this healthy Chinese university-aged sample.

An alternative explanation for the lack of stoicism difference in this study may be associated with the age of the present sample. The Chinese are reported as more capable of inhibiting and regulating their emotions with increased experience and age. Therefore, any ethnic differences in the endorsement of stoic attitudes with pain may be more pronounced in an older Chinese sample. One can also speculate that the ethnic differences in stoic attitudes toward pain may be more salient among people suffering from chronic pain because young and healthy individuals may be less in need for stoicism given the lack of any ongoing, persistent pain problems. Further, the influence of Confucianism is declining in Chinese societies as young Chinese people in the recent generation have more opportunities to explore and adapt to Western cultures.

It is curious that the Chinese participants endorsed higher catastrophizing than the Euro-Canadians in this study. Catastrophizing has been described as a form of passive coping and was suggested to represent a broader dimension of a communal or interpersonal approach to coping. Within the Communal Coping Model, it is proposed that catastrophizing serves a social communicative function aimed toward maximizing the probability that distress will be managed within a social/interpersonal context rather than an individualistic context. Eastern cultures, such as the Chinese, emphasize interdependence rather than independence. Individuals within the Western culture, described as an independent culture, tend to exert greater primary control (ie, engage in active behaviors to change their reality or situation). On the other hand, interdependent individuals tend to exert greater secondary control by accepting existing circumstances and modifying psychological effects caused by this situation. Since this study did not assess control and coping variables, no conclusion can be drawn. However, one can speculate that the cultural differences in primary and secondary control may parallel the present findings that the Chinese reported greater helplessness catastrophizing, which is associated with lower personal control and self-efficacy for pain self-management. Future studies should consider including measures of various pain-coping strategies to understand how the Chinese cope with pain.

Some limitations should be noted when interpreting the present results. First, the CP task is an acute and controlled painful experience. While the cold-pressor task is considered a good model of clinical pain, the outcomes may have limited practical utility because the threat value of experimentally induced pain is not similar to pain from a naturally occurring injury. Cold-pressor pain may not be threatening enough to elicit psychological processes, such as catastrophizing. However, we do not have any direct evidence of such speculation in this study. It is also possible that the present study may be subjected to a ceiling effect where the CP task was too painful, leaving little room for individual differences. Future research can examine threat by asking participants directly how “threatening” they would consider the CP task before and after exposure or by manipulating the instructions prior to CP task. Another limitation is that the present study only utilized 1 type of experimental pain paradigms. Results may differ for other types of laboratory pain stimuli. In addition, because participants were healthy and young university students recruited from a homogenous urban university population, the degree to which these findings can be generalized to other populations is unknown. Another concern of the study was the potential confound of stress related to the adaptation to a new country for the Chinese participants. Because general psychological distress can influence the pain responses, the CES-D was used to examine this potential confounding factor. There was no difference between the groups on this measure. Thus, the group differences in pain responses found in this study were not likely to be related to stressful acclimation. However, both the Chinese and Euro-Canadian participants in this study may represent a selected subgroup of the general population whose pain responses may likely differ from those who are older, poorly educated, or working in industrial and manual-labor jobs. Future research should include a wider range of samples, including an older Chinese sample in clinical and nonclinical studies. Lastly, although it is important to be knowledgeable about potential ethnic differences in pain...
responses, it is also important to consider the heterogeneity within ethnic groups. The Chinese are not a homogenous group, and it is important to recognize that ultimately all patient care should be delivered on an individual basis.

Conclusions
The current study provides several novel findings in regard to ethnic differences in experimental pain in healthy Chinese university-aged students displayed lower pain tolerance and reported greater SF-MPQ-Affective compared to their European Canadian counterparts. Group differences in pain catastrophizing were also noted, with pain catastrophizing mediating the group difference in SF-MPQ-Affective pain. Future experimental and clinical research is required to better understand the mechanisms underlying the ethnic differences in pain responses found in this study.

References


