Judgments About Pain Intensity and Pain Genuineness: The Role of Pain Behavior and Judgmental Heuristics

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Abstract: The primary objective of the present study was to examine the relative importance of pain behaviors and judgmental heuristics (e.g., gender stereotypes) in observers’ inferences about pain intensity and pain genuineness. Participants (n = 90) observed video depictions of chronic pain patients performing a physically challenging task and were asked to make inferences of pain intensity and pain genuineness. Analyses indicated that observers relied on judgmental heuristics and pain behaviors both when making inferences about pain intensity and when making inferences about pain genuineness. Follow-up analyses, however, revealed that judgmental heuristics (e.g., gender stereotypes) were significantly less utilized when observers made inferences about pain genuineness than when observers made inferences about pain intensity. When observers made inferences about pain genuineness, analyses indicated that patients’ facial pain behaviors became the most important source of information. Taken together, these findings suggest that observers who are asked to make inferences about the genuineness of others’ pain are likely to reduce their reliance on judgmental heuristics in favor of more controlled and thoughtful inferential processes characterized by detailed processing of behavioral information, particularly others’ facial pain behaviors.

Perspective: The current study provides new insights into the processes that are involved in observers’ inferences about pain intensity and pain genuineness. These inferences play an important role in treatment decisions and advances in this domain could ultimately contribute to more effective management of the challenges facing patients with pain-related disorders.

Key words: Pain behaviors, judgmental heuristics, pain intensity, pain genuineness.
and effortless inferential processes such as heuristic processing,\textsuperscript{11,20} inferences about the genuineness of others’ pain might be governed by a more effortful and thoughtful mode of inference. In other domains of research, for example, it has been shown that heuristic processing may decrease if suspicion is raised about the truthfulness and/or the honesty of other individuals.\textsuperscript{5,12,22} Applied to the context of pain inference, this finding suggests that heuristic-based processing may decrease if suspicion is raised about the genuineness or the authenticity of others’ pain. If observers are asked to make inferences about the genuineness of others’ pain, they may become more thoughtful and systematic in processing the available information, including others’ pain behaviors. Research aiming to elucidate the different processes involved in observers’ inferences about pain intensity and pain genuineness has implications for clinical practice given that such inferences can play a pivotal role in treatment decisions and in the management of patients with pain conditions.\textsuperscript{3,23,28}

In the present study, participants observed video depictions of chronic pain patients performing a physically challenging task. Participants were first asked to infer the level of pain intensity experienced by the patients depicted in the video sequences. Participants were then asked to infer the level of genuineness of the chronic pain patients. Of interest was to examine whether the relative importance of judgmental heuristics and patients’ pain behaviors varied as a function of observers’ inferential goals.

Methods

Participants

A sample of 90 (19 men, 71 women) undergraduate psychology students from McGill University volunteered to participate in this study. Participants ranged in age from 17 to 27 years (mean = 19.8; SD = 1.7).

Materials

Stimuli: Video Sequences of Patients With Chronic Back Pain

Participants viewed videotapes of 20 patients (12 men, 8 women) with persistent back pain who agreed to be videotaped while performing a physically demanding lifting task.\textsuperscript{26} During the lifting task, patients were asked to stand in front of a table (surface: 80 × 120 cm) on which were placed 18 canisters partially filled with sand. Participants were asked to lift the canisters with their dominant arm in a predetermined sequence. The canisters weighed 2.9, 3.4, or 3.9 kg and were arranged in 3 rows of 6 canisters. The canister locations corresponded to 3 functional anthropometric postural positions: normal, maximum, and extreme reaches. In the normal reach position, the participant stood erect with his or her elbow bent at 90° (position 1); in the maximum reach position, the participant stood erect with his or her arm fully extended (position 2); in the extreme reach condition, the participant was forwardly flexed with his or her arm fully extended (position 3).

A set of 80 video sequences of 5 seconds each in duration was assembled and used as stimuli in the present research. Participants viewed 4 distinct and mutually independent video sequences of each patient (eg, 2 video sequences in the normal reach position and 2 video sequences in the extreme reach condition). Patients’ faces, trunks, and upper extremities as well as the table and the canisters being lifted were visible in the video sequences. Each 5-second video sequence began prior to the lifting of a canister and ended after the canister was replaced on the table.

Stimuli: Pain Behavior Indices

Pain behavior was coded by 2 independent judges using a pain behavior coding system described by Sullivan et al.\textsuperscript{26} For each video sequence, judges recorded the occurrence of the following pain behaviors: 1) facial expressions such as grimacing or wincing, and 2) bodily movements such as guarding, holding, touching, stretching, or rubbing. Judges recorded the duration (in seconds) of pain behaviors and provided intensity ratings on a 3-point scale with the following anchors: 1) mild, 2) moderate, and 3) intense. The mean of the 2 judges’ ratings for pain behavior intensity and pain behavior duration was used in the analyses. For each video sequence, the intensity of each behavior was multiplied by its duration.\textsuperscript{18}

Percentage agreement for the classification of different forms of pain behavior was 94% (range 80–100%) and 93% (range 85–100%) for facial expressions and bodily movements, respectively. Percentage agreement for the ratings of pain behavior intensity was 92% for facial expressions and 96% for bodily movements. Correlations between the 2 coders’ ratings of pain behavior duration were used as indices of inter-rater agreement and were .95 and .96 for facial expressions and bodily movements, respectively.

Procedure and Measures

Upon arrival for the study, participants were informed of the nature of the research and were invited to sign a consent form. Participants were told that they would be watching video sequences of patients with persistent back pain performing a physically demanding lifting task. The program of research received ethical approval from the Ethics Review Committee of McGill University.

The participants were first asked to infer the level of pain experienced by the patients presented in the video sequences. Prior to watching the video sequences, the participants were familiarized with the pain rating scale (0–10) that appeared on the response sheet. The stimuli presentation design was identical to that described in Martel et al.\textsuperscript{11} Video sequences were presented continuously in a random order on a projector screen (4 × 5 feet). The same random sequence was used for all participants with the constraint that no 2 sequences of the same patient appeared in immediate succession. Following
each 5-second video sequence, 4 seconds of blank screen was inserted to allow participants time to make their response.

Prior to viewing the first series of 80 video sequences, the participants were provided with the following instructions:

“You will now watch video sequences of patients with persistent back pain performing a physically demanding lifting task. For each video sequence, I would like you to rate the person's level of pain using the 0–10 scale that appears on your response sheet.”

Prior to viewing the second series of 80 video sequences, the participants were provided with the following instructions:

“Certain patients previously depicted in the video sequences were faking pain during the lifting task. You will now watch the same video sequences. I would like you to rate, for each video sequence, the degree to which you believe the person on the video is faking pain, using the 0–10 scale that appears on your response sheet.”

It was not possible to counterbalance the order of pain and faking inferences since alerting participants to the possibility that some patients are faking pain would have influenced participants’ subsequent inferences of pain intensity. With suspicion raised about the genuineness of patients’ pain (ie, advance warning of faking), observers would not have been able to approach the pain inference task without a priori biases.

**Inferences of Pain**

Participants were provided with a response sheet on which they were asked to infer the level of pain experienced by the patients presented in the video sequences. Participants made inferences of pain using an 11-point scale with the endpoints (0) for no pain and (10) for extreme pain.

**Inferences of Faking**

Participants were provided with a response sheet on which they were asked to infer the degree of faking of the patients presented in the video sequences. Participants made inferences of faking using an 11-point scale with the endpoints (0) for no faking and (10) for extreme faking.

**Data Reduction and Data Analytic Approach**

In order to examine the degree to which observers relied on patients’ pain behavior in drawing inferences about pain and faking, covariation indices (ie, stimulus-based rating indices) were computed for each participant.26 The covariation indices are described in more detail below. Covariation indices were computed separately for inferred pain ratings (ie, stimulus-based pain rating indices) and for inferred faking ratings (ie, stimulus-based faking ratings indices).

**Stimulus-Based Pain Rating Indices.** For each participant (ie, observer), within-subject correlations were computed between inferred pain ratings and pain behavior scores, across all 80 stimuli. Correlations (ie, stimulus-based pain ratings indices) were computed separately for facial expressions and bodily movements. The correlations between observers’ inferred pain ratings and pain behavior scores range from −1 to 1 and reflect the degree to which observers used patients’ pain behaviors (ie, facial expressions, bodily movements) to infer pain ratings. Higher values on the stimulus-based pain rating indices reflect greater utilization of patients’ pain behaviors in making inferences about pain.

**Stimulus-Based Faking Rating Indices.** For each participant (ie, observer), within-subject correlations were computed between inferred faking ratings and pain behavior scores, across all 80 stimuli. Correlations (ie, stimulus-based faking ratings indices) were computed separately for facial expressions and bodily movements. The correlations between observers’ inferred faking ratings and pain behavior scores range from −1 to 1 and reflect the degree to which observers used patients’ pain behaviors (ie, facial expressions, bodily movements) to infer faking ratings. Higher values on the stimulus-based faking rating indices reflect greater utilization of patients’ pain behaviors in making inferences about faking.

Two separate within-subjects analyses of variance (ANOVAs) were used to examine whether observers’ inferred pain ratings and inferred faking ratings varied as a function of canister position and the sex of patients depicted in the video sequences (ie, judgmental heuristics). Two separate analyses of covariance (ANCOVAs) were used to examine whether judgmental heuristics (eg, canister position, sex of patients) contributed to pain and faking ratings even when controlling for observers’ use of pain behaviors as a basis for making ratings. In these ANCOVAs, stimulus-based rating indices were used as covariates.

Direct multiple regression analyses were used to examine the relative contribution of judgmental heuristics and pain behaviors to observers’ pain and faking ratings. In direct regression analyses, the contribution of each independent variable is evaluated while controlling (ie, partialling out) the contributions of all other variables included in the model.27 A first multiple regression analysis was conducted on inferred pain ratings, using judgmental heuristics and pain behaviors as predictor variables. A second multiple regression analysis was conducted on inferred faking ratings, using judgmental heuristics and pain behavior as predictor variables. In both regression analyses, the predictor variables (ie, judgmental heuristics, pain behaviors) were entered simultaneously into the models. The beta weights for each predictor variables permitted examination of the relative (ie, unique) contribution of judgmental heuristics and pain behaviors to observers’ inferred pain and faking ratings. The contribution of judgmental heuristics and pain behaviors was examined both within and across regression models (ie, inferential conditions).

A 2-step procedure was used to examine whether the relative contribution of judgmental heuristics and pain...
behaviors differed significantly across inferential conditions. First, part correlation coefficients specific to each of the predictors included in the regression models described above were converted to Z-scores using the Fisher r-to-z transformation procedure. The part correlation coefficients (Z-scores) specific to judgmental heuristics and pain behaviors reflect the relative (ie, unique) contribution of these variables to the prediction of observers’ pain and faking inferences. The Z-scores were then compared across regression models using the Steiger’s Z-test, which allows testing for the significance of the difference between the contribution of predictor variables included in 2 distinct regression models.

Results

Stimulus Characteristics (Back Pain Patients)

Means and standard deviations for patients’ (ie, stimuli) demographics and pain condition characteristics are presented in Table 1, separately for men and women. Analyses revealed no significant sex differences in age, t (18) = –.36, ns, pain duration, t (18) = 3.3, ns, pain severity, t (18) = 1.2, ns, or in self-reported pain ratings provided during the lifting task, t (18) = .50, ns. Men and women did not differ significantly in the display of bodily movements, t (18) = .07, ns, or in the display of bodily movements, t (18) = –.01, ns.

The Role of Pain Behavior in Observers’ Inferences of Pain

The role of pain behavior in observers’ inferences of pain was addressed by computing within-subject correlations between each observers’ inferred pain ratings and pain behavior scores, across all 80 stimuli. Within-subject correlations were computed separately for facial expressions and bodily movements. Consistent with previous research, the overall mean covariation between inferred pain ratings and facial expressions (M = .32, SD = .14) was significantly greater than the mean covariation between inferred pain ratings and bodily movements (M = .16, SD = .10), F (1, 89) = 122.64, P < .001, indicating that observers relied more on facial expressions than bodily movements in drawing inferences about pain.

Table 1. Stimulus Characteristics: Chronic Back Pain Patients

<table>
<thead>
<tr>
<th></th>
<th>MEN (n = 12)</th>
<th>WOMEN (n = 8)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury site</td>
<td>100% back</td>
<td>100% back</td>
<td>—</td>
</tr>
<tr>
<td>Age (years)</td>
<td>41.2 (8.8)</td>
<td>40.9 (10.3)</td>
<td>—</td>
</tr>
<tr>
<td>Pain duration (years)</td>
<td>9.9 (7.8)</td>
<td>4.5 (6.0)</td>
<td>—</td>
</tr>
<tr>
<td>MPQ-PRI</td>
<td>19.6 (11.0)</td>
<td>26.4 (15.2)</td>
<td>—</td>
</tr>
<tr>
<td>Self-reported</td>
<td>3.6 (1.9)</td>
<td>4.1 (1.9)</td>
<td>—</td>
</tr>
<tr>
<td>Pain behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facial expressions</td>
<td>4.8 (7.4)</td>
<td>2.5 (2.6)</td>
<td>—</td>
</tr>
<tr>
<td>Bodily movements</td>
<td>3.4 (8.0)</td>
<td>3.8 (4.0)</td>
<td>—</td>
</tr>
</tbody>
</table>

Abbreviations: MPQ-PRI, McGill Pain Questionnaire Pain-Rating Index. NOTE: Numbers in parentheses are standard deviations.

The Influence of Judgmental Heuristics on Observers’ Inferences of Pain

In order to examine the influence of judgmental heuristics on observers’ pain inferences, a 2-way (stimulus sex × canister position) repeated measures analysis of variance (ANOVA) was performed on observers’ inferred pain ratings. Means and standard deviations are presented in Table 2. The analysis revealed a significant main effect for stimulus sex, F (1, 89) = 27.96, P < .001, indicating that observers rated the pain of women to be more intense than the pain of men. The analysis also revealed a significant main effect for canister position, F (1, 89) = 161.02, P < .001, indicating that observers inferred significantly more pain when watching patients lifting canisters positioned further away from the body (arm-extended) than canisters closest from the body. Main effects were qualified by a significant stimulus sex × canister position interaction, F (1, 89) = 33.19, P < .001, indicating that observers rated the pain of women to be significantly more intense than the pain of men when watching patients lifting canisters that were further away from the body (arm extended).

Analysis of covariance (ANCOVA) was used to examine whether the influence of judgmental heuristics on observers’ pain inferences could be accounted for by pain behavior. A two-way (stimulus sex × canister position) analysis of covariance (ANCOVA) was performed on inferred pain ratings, using the stimulus-based pain rating index for facial expressions as the covariate. The stimulus-based pain rating index for bodily movements was not considered in the analysis given that observers used significantly more facial expressions than bodily movements to infer patients’ levels of pain. The results of the analysis revealed that the main effects for stimulus sex (F (1, 88) = 38.78, P < .001) and canister position (F (1, 88) = 11.63, P < .005) both remained significant even when controlling for the use of facial expressions to draw inferences about pain. Partial eta square values (C2p) were .31 and .12 for stimulus sex and canister position, respectively.

The Role of Pain Behavior in Observers’ Inferences of Faking

The role of pain behavior in observers’ inferences of faking was addressed by computing within-subject correlations between each observers’ inferred faking ratings and pain behavior scores, across all 80 stimuli.

Table 2. Observers’ Pain Inferences as a Function of Stimulus Sex and Canister Position

<table>
<thead>
<tr>
<th>Stimulus sex</th>
<th>NORMAL</th>
<th>EXTREME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>2.3 (1.4)</td>
<td>3.0 (1.3)</td>
</tr>
<tr>
<td>Women</td>
<td>3.6 (1.3)</td>
<td>5.5 (2.1)</td>
</tr>
</tbody>
</table>

NOTE: Numbers in parentheses are standard deviations. Normal refers to the canister position closest to the patient’s body. Extreme refers to the canister position furthest away from the patient’s body (arm-extended).
Within-subject correlations were computed separately for facial expressions and bodily movements. Overall, the mean covariation between inferred faking ratings and facial expressions (M = .29, SD = .16) was significantly greater than the mean covariation between inferred faking ratings and bodily movements (M = .12, SD = .15), F (1, 89) = 105.44, P < .001. These results indicate that observers relied more on facial expressions than bodily movements in drawing inferences of faking.

The Influence of Judgmental Heuristics on Observers’ Inferences of Faking

In order to examine the influence of judgmental heuristics on observers’ faking inferences, a 2-way (stimulus sex x canister position) repeated analysis of variance (ANOVA) was performed on observers’ inferred faking ratings. Means and standard deviations are presented in Table 3. The results of this analysis revealed a significant main effect for stimulus sex, F (1, 89) = 32.81, P < .001, indicating that observers inferred significantly more faking in men than in women. The analysis also revealed a significant main effect for canister position, F (1, 89) = 48.20, P < .001, indicating that observers inferred significantly more faking when watching patients lifting canisters positioned further away from the body (arm-extended) than canisters closest from the body.

Analysis of covariance (ANCOVA) was used to examine whether the influence of judgmental heuristics on observers’ faking inferences could be accounted for by pain behavior. A two-way (stimulus sex x canister position) analysis of covariance (ANCOVA) was performed on inferred faking ratings, using the stimulus-based faking rating index for facial pain expressions as the covariate. The stimulus-based faking rating index for bodily movements was not considered in the analysis given that observers used significantly more facial expressions than bodily movements to infer patients’ levels of faking. ANCOVA results indicated that when the stimulus-based faking rating index for facial expressions was used as the covariate, the main effect of canister position was no longer statistically significant, F (1, 88) = 1.21, ns. The main effect of stimulus sex, however, remained significant even when controlling for the stimulus-based faking rating index, F (1, 88) = 8.60, P < .005, suggesting that the effect of patients’ sex on faking inferences was not accounted for by facial expressions. Using ANCOVA, partial eta square value (gp2) for the effect of stimulus sex was .09. Taken together, these results suggest that stimulus sex but not canister position contributed to observers’ faking inferences independent of the variance accounted for by pain behavior.

Inferences About Pain and Faking: The Relative Role of Pain Behaviors and Judgmental Heuristics

A Pearson correlation was first conducted to examine the association between observers’ inferred pain ratings and observers’ inferred faking ratings. For this analysis, observers’ pain and faking ratings were averaged for each patient depicted in the video sequences. A significant positive association was found between these two variables, r = .64, P < .05, indicating that patients initially judged as having high levels of pain were subsequently judged as having high levels of faking.

Two separate direct multiple regression analyses were then conducted to examine the relative contribution of judgmental heuristics and pain behaviors to observers’ pain and faking ratings (see Table 4). A direct regression analysis was first conducted using the sex heuristic (ie, stimulus sex), facial expressions, and bodily movements as predictor variables, and total inferred pain ratings as the dependent variable. Together, these variables accounted for significant variance in inferred pain ratings, R² = .66, F change (3, 16) = 10.30, P = .001. Examination of the beta weights for the first regression analysis revealed that stimulus sex (B = –.68, P < .001) and facial expressions (B = .54, P < .005) both contributed significant unique variance to the prediction of inferred pain ratings.

A second regression analysis was conducted using the sex heuristic (ie, stimulus sex), facial expressions, and bodily movements as predictor variables, and total inferred faking ratings as the dependent variable. Together, these variables accounted for significant variance in inferred faking ratings, R² = .63, F change (3, 16) = 8.88, P = .001. However, examination of the beta weights for regression 2 revealed that only facial expressions (B = .78, P < .001) contributed significant unique variance to the prediction of inferred faking ratings.

Table 4. Direct Multiple Regression Analyses Examining the Relative Contribution of Stimulus Sex and Pain Behaviors to the Prediction of Pain and Faking Inferences

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>BETA</th>
<th>t</th>
<th>P</th>
<th>r (PART)</th>
<th>R²</th>
<th>F(CHG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression 1: Stimulus Sex and Pain Behaviors Predicting Pain Inferences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.66</td>
<td>10.30*</td>
</tr>
<tr>
<td>Stimulus sex</td>
<td>–.68</td>
<td>–4.5</td>
<td>.000</td>
<td>–.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facial expressions</td>
<td>.54</td>
<td>3.3</td>
<td>.004</td>
<td>.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bodily movements</td>
<td>.10</td>
<td>.7</td>
<td>.511</td>
<td>.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression 2: Stimulus Sex and Pain Behaviors Predicting Faking Inferences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.63</td>
<td>8.88*</td>
</tr>
<tr>
<td>Stimulus sex</td>
<td>–.28</td>
<td>–1.8</td>
<td>.089</td>
<td>–.28</td>
<td></td>
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<tr>
<td>Facial expressions</td>
<td>.78</td>
<td>4.6</td>
<td>.000</td>
<td>.70</td>
<td></td>
<td></td>
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<tr>
<td>Bodily movements</td>
<td>.04</td>
<td>.2</td>
<td>.816</td>
<td>.04</td>
<td></td>
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</tbody>
</table>

*P < .01.

NOTE: Numbers in parentheses are standard deviations. Normal refers to the canister position closest to the patient’s body. Extreme refers to the canister position furthest away from the patient’s body (arm-extended).
Three separate Steiger's Z-tests were used to examine whether the relative contribution of the sex heuristic and pain behaviors significantly differed across inferential conditions. The contribution of the position heuristic was not examined across inferential conditions given that variations in patients' postural lifting positions only emerged as a judgmental heuristic in observers' inferences of pain intensity. The Steiger's Z-tests were performed after the application of Fisher's r-to-z-transformation procedure on the part correlation coefficients included in the regression analyses described above (see Table 4).

A first Steiger’s Z-test was used to examine whether the relative contribution of the sex heuristic differed significantly across inferential conditions. The results of this analysis indicated that the contribution of the sex heuristic was significantly greater when observers made inferences of pain than when observers made inferences of faking ($Z = 2.34, P < .05$). In other words, the contribution of the sex heuristic significantly decreased when observers were asked to make inferences about faking. A second Steiger’s Z-test was used to examine whether the relative contribution of facial expressions differed significantly across inferential conditions. The results of the Steiger’s Z-test failed to reach significance ($Z = 1.45, \text{ns}$), indicating that the contribution of facial expressions was not significantly different when observers made inferences of pain and when observers made inferences of faking. Likewise, the results of a third Steiger’s Z-test indicated that the contribution of bodily movements was not significantly different when observers made inferences of pain and when observers made inferences of faking ($Z = .16, \text{ns}$).

**Discussion**

The present study examined the relative importance of pain behaviors and judgmental heuristics in observers’ inferences about pain intensity and pain genuineness. The findings are consistent with previous studies showing that observers rely on pain behaviors when they make inferences about pain intensity\cite{14,24,25} and pain genuineness.\cite{7,9,16} The findings are also consistent with previous studies showing that observers rely on judgmental heuristics when they make inferences about pain intensity.\cite{11,20} The findings reported here add to previous work by demonstrating that observers also rely on judgmental heuristics when they make inferences about pain genuineness. The key finding of the present study is that the relative importance of judgmental heuristics and pain behaviors varies as a function of observers’ inferential goals.

As shown in previous studies, observers relied significantly more on facial expressions than on bodily movements in making inferences about pain intensity.\cite{14,25} Previous studies have shown that both forms of behavior are used by observers in making inferences about pain, but that observers assign greater inferential weight to the face than to the body.\cite{14,25} It has been suggested that facial expressions are considered more reliable indicators of others’ pain experience than bodily movements.\cite{15,25,29}

The findings indicated that observers also relied significantly more on facial expressions than on bodily movements in making inferences about pain genuineness (ie, inferences about faking). These results parallel those of Craig et al,\cite{7,9,13} who showed that observers tend to use specific facial actions in making inferences about the genuineness of others’ pain. In the present study, it is possible that observers considered facial expressions a more useful source of information than bodily movements in making inferences about faking. Observers may have assumed that faked expressions of pain would be more easily discernible through patients’ faces than through patients’ bodily movements.

Of interest in the present study was to examine whether the relative influence of pain behaviors varied when observers made inferences about pain intensity and when observers made inferences about pain genuineness. Analyses indicated that observers’ reliance on facial pain behaviors increased once suspicion was raised about the genuineness of patients’ pain and when observers made inferences about faking, even though the magnitude of this increase was not statistically significant. This finding suggests that raising suspicion about the genuineness of patients’ pain may have led observers to change their inferential strategies, at least with respect to the processing of patients’ pain behaviors. When the goal was to infer faking, observers may have engaged in a more thoughtful and systematic mode of processing than when the goal was to infer pain, seeking behavioral clues that might confirm the expected presence of faking.

As shown in previous inference studies, the present findings indicated that a sex heuristic operated when observers made inferences about pain intensity.\cite{11,20} The results indicated that observers inferred significantly greater levels of pain in women than in men, even when controlling for observers’ use of pain behavior as a basis for making pain inferences. Theory and research in the domain of gender stereotypes suggest that observers have different beliefs about the experience of pain in men and in women. For example, women are expected to be more sensitive to pain than men,\cite{19} and this belief has been shown to account for significant variance in observers’ inferences about pain.\cite{20}

A sex heuristic also seems to have operated when observers made inferences about faking. The results indicated that observers inferred significantly greater levels of faking in men than in women, even after controlling for observers’ use of pain behavior as a basis for making faking inferences. The present study is the first to show that a sex heuristic operates when observers make inferences about the genuineness of others’ pain. It is interesting to note that this sex heuristic is of a different nature than the sex heuristic that operates when observers make inferences about the intensity of others’ pain (eg, women feel more pain than men). Here, we found that men were perceived as faking more than women, suggesting that observers are likely to hold preexisting stereotypical beliefs with regards to sex differences in pain genuineness. Similar findings have been reported in the emotion literature, with men’s
emotional experiences being considered as less genuine than women’s emotional experiences. 4,6

Given that a sex heuristic operated both when observers made inferences about pain intensity and when observers made inferences about faking, we examined whether the utilization of the sex heuristic varied as a function of observers’ inferential goals. The results indicated that the sex heuristic was significantly less utilized when observers made inferences of faking than when observers made inferences of pain. In other words, observers’ reliance on heuristic processing decreased when suspicion was raised about the genuineness of patients’ pain and when observers made inferences about faking. This finding is in line with social perception research showing that heuristic processing may decrease if suspicion is raised about the truthfulness and/or the honesty of other individuals. 5,12,22 In truth-seeking contexts, it has been proposed that individuals will shift from automatic to more controlled forms of information processing. 1,5 In our study, when the goal became to infer the genuineness of patients’ pain, it is likely that observers reduced their reliance on judgmental heuristics in favour of more controlled, thoughtful, and systematic inferential processes characterized by detailed processing of available information. As discussed earlier, this might explain why the influence of patients’ pain behaviors increased when observers were asked to make inferences about pain genuineness.

The findings of our study have implications for the treatment of patients presenting with pain conditions. Our findings suggest that patients with pain, particularly those perceived as having high levels of pain, may swiftly become perceived as faking pain if suspicion is raised about the genuineness of their pain condition. If suspicion is raised and observers are asked to make inferences about patients’ levels of faking, our findings suggest that observers will reduce their reliance on judgmental heuristics and will increase their focus on patients’ pain behaviors. Our findings further suggest that facial pain behaviors will become the most important source of behavioral information, since other forms of pain behavior such as guarding, rubbing, and stretching appear to be only weakly associated with observers’ inferences of faking. If suspicion is raised about the genuineness or the authenticity of a patient’s pain, our findings suggest that the presence of facial pain behaviors, but not necessarily of bodily movement pain behaviors, may become a discriminative cue for pejorative clinical judgments such as symptom exaggeration or faking.

Some degree of caution must be exercised in the interpretation of the present findings. First, the use of a sample of undergraduate students limits the generalizability of the findings to other populations and settings. Second, men and women depicted in the video sequences differed considerably in terms of pain duration, pain severity, and facial pain behaviors. These differences, although not statistically significant, need to be considered when interpreting the influence of patients’ sex on observers’ pain and faking inferences. Finally, the high number of video sequences used in the study (160 × 5 seconds) might have increased observers’ fatigue and decreased their level of concentration during inferential tasks. Given that the order of inferential conditions (ie, pain or faking) was not counterbalanced, the influence of carryover effects must be considered when interpreting the present findings. It should be noted, however, that the counterbalancing of inferential conditions was not a feasible method for validly examining the differential processes (ie, the within-individual differences) involved in observers’ inferences about pain intensity and pain genuineness. For example, alerting participants to the possibility that some patients are faking pain would have influenced participants’ subsequent inferences of pain intensity.

Despite the above limitations, our study provides new insights into the processes that are involved in observers’ inferences about pain intensity and pain genuineness. Taken together, our findings suggest that the relative importance of judgmental heuristics and pain behaviors varies as a function of observers’ inferential goals. Interestingly, our study is the first to show that observers rely on a sex heuristic both when making inferences about pain intensity and when making inferences about pain genuineness. With regards to pain genuineness, we found that observers made significantly greater inferences of faking in men than in women, even after controlling for the influence of patients’ pain behaviors. When suspicion is raised about the genuineness of patients’ pain, our results suggest that the importance of facial expressions, but not necessarily bodily movements, will increase. These findings could have important implications for clinical practice if replicated with a sample of health professionals. Given that inferences about pain intensity and pain genuineness play a critical role in treatment decisions and in the management of patients with pain conditions, 3,23,28 further research should investigate the manner in which patients’ pain behaviors, judgmental heuristics, and contextual factors summate or interact in the process of making such inferences. Advances in this domain could ultimately contribute to more effective management of the challenges facing patients with pain-related disorders.

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References


