Tough guys or sensitive guys? Disentangling the role of examiner sex on patient pain reports

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BACKGROUND: Experimental and clinical pain studies are conflicting regarding whether individuals report heightened or dampened pain sensitivity in the presence of other men or women.

OBJECTIVES: In the present preliminary study, two small medical record reviews of patients admitted for emergency care were conducted to examine the possibility that patients may report differential pain intensity to male and female health care examiners. The study also sought to determine whether these effects are moderated by and, thus, only detectable by examining patients at different pain (debilitation) levels.

METHODS: Pain intensity scores were extracted from two medical record reviews of patients admitted for emergency care (n=64 and n=135, respectively). Pain intensity was measured using an 11-point numerical scale during standard triage assessments and the sex of the examiner was recorded.

RESULTS: Mean pain scores reported to male and female emergency staff did not differ in either set of medical records. However, when patients were split between low and high pain levels, male patients reported higher pain scores to male practitioners when experiencing relatively low pain levels, and both male and female patients reported higher pain scores to female practitioners when experiencing relatively high pain levels.

DISCUSSION: The statistical magnitudes of these effects were large, suggesting that this phenomenon may be a pervasive feature in clinical settings and experimental pain studies.

CONCLUSION: These preliminary findings warrant larger-scale investigations of social contextual influences on patient pain reports, which are necessary for creating more standardized protocols for reliably assessing and treating patient pain experiences.

Key Words: Communication; Health disparities; Interpersonal; Pain intensity; Patient care

folk wisdom has often accused men of being both tough and weak, and sometimes ‘babysish’ in complaining of pain sensations to women (e.g., lovers and mothers). So, which is it? If one examines experimental pain studies, the findings are mixed and suggest that the role of the observer’s sex on pain perceptions is contingent on a multitude of interpersonal factors. For example, several experiments have shown that, in general, individuals are more likely to demonstrate heightened exogenous pain sensitivity when they are assessed by a female researcher (1-3). In our laboratory, we have found that the absolute number of female subjects (strangers) but not male subjects present during an ischemic pain task is linearly associated with hyperalgesia in women only (4). In another study, we showed that even minimal procedural interactions with female personnel (e.g., processing consent procedures and explaining the research protocol) can lead to heightened experimental pain reports, also more so in women, even when the noxious stimuli is experienced in solitude without the actual physical presence of another person (Vigil et al, unpublished data). This is consistent with from a social-signalling perspective of pain, which is based on the hypothesis that individuals should experience the highest levels of felt pain in the immediate presence of the types of relationship partners (eg, family, significant other) that are most likely to provide solicitous reactions toward the individual experiencing pain (5-7). Given that, on average, women naturally demonstrate higher levels of parental investment and pain-empathizing behaviours than men (4,8-12), individuals, and especially women, are predicted to demonstrate greater pain sensitivity (eg, hyperalgesia) in the immediate presence of other women than in the presence of men (7).

The impact of the presence of women on the momentary pain intensity levels of men appears to be more dynamic. Our laboratory and others have found that, in men only, the real or simulated presence of female researchers or other female strangers during an experimental pain test (eg, cold pressor, ischemic) results in hypodgesia (Vigil, unpublished data; Vigil, Rowell, Alcock, Maestes, unpublished data; 4,13,14). Other research has demonstrated that this hypodgesic effect is linearly related to the absolute number of female strangers in the room during the pain task (4). Thus, it appears that, among healthy young men, the presence of female strangers produces a hypodgesic effect, although the opposite pattern (hyperalgesia in the presence of a female researcher) has also been reported (1,2).

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Clinical studies, however, show that solicitous spousal responses are associated with increased pain behaviours (15,16), and that men, in particular, tend to report greater debilitating pain when they cohabit with a spouse than when they live alone (Vigil, Pendleton, Coulombe, Vowles, Alcock, Smith, unpublished data). In other words, experimental and clinical pain studies are mixed on whether men report heightened or dampened pain sensitivity in the immediate presence of women. We believe that it is possible to interpret these seemingly discrepant findings from the social-signalling perspective that momentary pain intensity partly functions for demonstrating vulnerability and, ultimately, trustworthiness trait impressions to intimate confidantes and other audience members with characteristics, such as female sex, that signal the probability of providing empathy to the individual experiencing pain (7,8,17). Therefore, the biological fitness costs and benefits of demonstrating heightened or lessened vulnerability to women should theoretically be contingent on implicit social expectations and other factors such as the momentary state or level of debilitation (ie, degree of pain severity) of the individual experiencing pain (4-8,18). Because, on average, women naturally express higher levels of pain empathizing than men (eg, rating higher severity of others’ pain [4,7]), women effectively serve as both an individual experiencing pain (4-8,18). Because, on average, women naturally express higher levels of pain empathizing than men (eg, rating higher severity of others’ pain [4,7]), women effectively serve as both an ecological and likely resource for consolation and caregiving for both sexes, as well as a potential reproductive partner for men. Men tend to use empowerment gestures (eg, concealed pain behaviours) to attract prospective mating partners (9,10,12), whereas they use vulnerability gestures, including explicated pain behaviours, to elicit solicitous responses from more established and intimate social partners (eg, female kin) in times of need (ie, when the individual is physically debilitated [7,8,17]).

One may, therefore, expect that individuals, particularly men, facultatively experience varying pain intensity levels in the immediate presence of a male versus a female practitioner, and the directions of the differences depend on the relative state of debilitation (eg, pain intensity level) of the individual. If this phenomenon exists, it may be undetectable by comparing mean pain levels that patients report to male or to female examiners directly, and may only be observable by comparing patients who are at broadly distinct pain intensity levels. We conducted two preliminary medical record reviews of patients admitted for treatment in an urban emergency department to examine these possibilities.
condition ($f^2=21.27$, $P=0.008$) and in the high pain condition ($f^2=3.65$, $P=0.001$); patients reported higher pain scores to male examiners in the low pain condition, and they reported higher pain scores to female examiners in the high pain condition.

For the second set of medical records, a $2 	imes 2$ (Examiner Sex × Patient Condition) ANOVA was first conducted among the combined sample of male and female patients. These analyses revealed a significant Examiner Sex × Patient Condition interaction term ($F_{1, 131}=11.05$, $P=0.001$). This interaction was again due to patients reporting higher pain scores to male examiners in the low pain condition ($t=6.80, P=0.020, d=0.71$), and they reported higher pain scores to female examiners in the high pain condition ($t=8.40, P=0.007, d=0.60$).

For the second set of medical records, a $2 	imes 2$ (Examiner Sex × Patient Condition) ANOVA conducted separately for male ($n=113$) and female patients ($n=27$) revealed a significant Examiner Sex × Patient Condition interaction term for both male ($F_{1, 105}=5.82$, $P=0.018$) and female patients ($F_{1, 22}=7.29$, $P=0.013$). Independent samples $t$-tests showed that male patients reported higher pain scores to male examiners in the low pain condition ($t=2.11$, $P=0.042$), and they showed a trend to report higher pain scores to female examiners in the high pain condition ($t=1.80$, $P=0.077$). Female patients only showed the latter pattern of reporting higher pain to female examiners in the high pain condition ($t=2.83, P=0.013$); the examiner effect was not detectable for the low pain condition ($P=0.252$). As shown in Figure 1, the statistical magnitudes of the observed effect sizes were moderate to large for men in the low pain condition, and they were moderate for men and robust for women in the high pain condition.

To ensure that the effects were not due to differences between examiners across subjects, multilevel models in which subjects (level 1 units) were nested within examiners (level 2 units) were also examined. Calculation of the intraclass correlation showed that the proportion of variance in VAS ratings due to differences between examiners was negligible ($<0.01$% for both male and female subjects). As expected, given these low intraclass correlations, estimating multilevel models did not change any of the conclusions, and the probing of the significant Examiner Sex × Patient Group interactions among both male and female subjects using an online tool (20) yielded the exact same pattern as that shown in Figure 1. Therefore, only the results from the parsimonious ANOVA model are shown here.

**DISCUSSION**

Here we show for the first time that emergency department patients report higher pain intensity levels to male practitioners when initial pain intensity is low, and emergency department patients report higher pain to female practitioners when initial pain intensity is high. The statistical magnitudes of these effects were substantially larger than those from typical nonpharmacological psychological (eg, biofeedback, hypnosis, cognitive-behavioural, acceptance therapy, placebo) interventions for acute pain intensity (21-24). We therefore believe that the influence of this interaction between examiner sex and patient condition on patient pain reports (‘Vigil-Alcock Effect’) is probably a pervasive feature in clinical and experimental settings.

These findings are interpretable from a social-signalling perspective, in which men tend to experience hypogalasia in the presence of women when at mild pain levels and, thus, when males are relatively capable and may be implicitly motivated to respond to female strangers as prospective reproductive partners. Because human males tend to utilize empowerment gestures (eg, braggng, inflated confidence, flashy body movements) to attract potential mates (9,10,12), it makes biological sense that men would express attenuated pain reports and other vulnerability behaviours to women under these conditions. This interpretation also accounts for the experimental finding that healthy young men experience hypogalasia when they are exposed to relatively mild forms of noxious stimuli in the presence of unfamiliar females (Vigil, unpublished data, Vigil, Rowell, Alcock, Maestes, unpublished data; 4,13). Of particular importance in the current study, pain scores of 3 and lower may often be clinically insignificant and scores in this category are less likely than higher scores to trigger analgesic treatment in the emergency department.

In contrast, patients with relatively high pain levels are likely to have clinically relevant pain and significant medical, psychiatric or other distress. High pain levels may cause both men and women to respond to other women as sources of solicitude, consolation and medical intervention. Because women evolved the behavioural heuristic to express higher levels of pain-empathizing behaviours than men in general (4,8-12), people may have coevolved the expressive heuristic to report amplified pain intensity in the immediate presence of females when the individual’s biological prowess and/or social status is perceived to be, or actually is, compromised. There is also some preliminary support that patient treatment may be associated with the health provider’s sex. Some research suggests that female nurses, for instance, may assign higher emergency index severity ratings (ie, lower triage scores) to emergency care patients than male nurses (Vigil and Alcock, unpublished data), and that female physicians are more likely than male physicians to prescribe higher doses of analgesics to underserved categories of patients such as ethnic minorities and other women (25,26).

The predictive validity of these hypotheses is, of course, contingent on larger studies among more representative samples of healthcare patients and, thus, investigations that can circumvent the obvious and notable limitations of the current study. The small sample sizes of patients examined in the present medical record reviews were undoubtedly confounded by innumerable relevant medical, social and contextual factors that may moderate and even mediate the modulating influence of examiner characteristics on momentary pain behaviours (eg, verbal reports and nonverbal pain gestures) and affective components of pain. For example, it is possible that the observations are not independent and, thus, the effect of examiner’s sex may be unduly influenced by additional characteristics of examiners (eg, age, personality), and larger studies that can account for these potential nested effects are, therefore, warranted (although see last paragraph of Results section). However, despite these limitations, the current preliminary study is significant for showing that the sex of health practitioners, which is a ubiquitous contextual factor during all health provider/patient interactions, may be a potential source of health disparities in patient assessments, which has broad implications for measuring and interpreting patient pain reports momentarily, across time points, and across patient populations and clinical settings. The current findings may also elucidate contextual factors that implicitly influence experimental pain results under otherwise controlled laboratory conditions. Further research investigating social contextual influences on pain reports is, therefore, necessary for creating more standardized protocols for reliably assessing and for treating patient pain experiences.

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