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Gender differences in the nonverbal communication of pain:

A new direction for sex, gender and pain research?

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## 1. Introduction

There are sex and gender differences in pain, which requires a biopsychosocial approach to fully understand and manage it [16; 17]. Progress has been made in isolating the biological and psychological mechanisms, but less is known about social factors [7; 35; 36]. Fortunately, our understanding of contextual processes in pain, and more generally in health and the neurosciences, is developing [13; 22; 48; 63]. The purpose of this topical review is to illustrate how we can draw on this knowledge to develop new directions for sex, gender and pain research. It will focus on nonverbal behaviours, demonstrating that there are relevant gender differences in interpersonal communication. From this, I propose that the field of sex, gender and pain can be enriched by adopting a nonverbal framework, and seek to understand the influence of such behaviours on the pain experiences of men and women.

## 2. Why nonverbal communication?

Humans communicate through verbal and nonverbal mechanisms, both of which are important for interpersonal interaction. If gender differences exist in pain communication, then we need to understand both verbal and nonverbal components (see Figure 1).

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Figure 1 about here

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However, gender research typically focuses on verbal reports of pain, and less is known about nonverbal aspects, risking an incomplete picture. This review will, therefore, focus on nonverbal aspects of pain communication. Once we have a

better understanding of these processes, we can consider the similarities and differences in how gender impacts on different forms of communication.

### **3. What is non-verbal communication?**

Non-verbal communication occurs early on in life, before the development of language, and continues to be important in adulthood [15; 44]. Non-verbal behaviours are relatively automatic, are more difficult (but not impossible) to hide from others [14], and take priority over verbal information when there is a disparity between what is said and what is displayed [29-31; 49]. This preference is likely to be because the evolutionary development of nonverbal behaviours predated language as a form of communication.

In pain, facial behaviours (e.g., grimacing), non-verbal utterances (e.g., cries, moans), and body movements (e.g., guarding), are well recognised in the clinic and have prototypical features that define and differentiate them from other expressions [5; 22; 43; 52; 54; 62; 74; 75]. These behaviours have a wider social function, as they provide valuable information about a person's pain state that can elicit sympathy or assistance from significant others, such as family members, healthcare providers etc. This is particularly pronounced when the ability to communicate pain verbally is removed, compromised or has yet to develop.

### **4. Why expect sex/gender differences in pain communication?**

There are good theoretical reasons why we might expect to find sex and gender differences in pain communication. Evolutionary approaches argue that sexual selection pressures led to differences in male and female behaviour, including communication [1; 56; 69]. For example, Vigil [69] proposes that gender differences in expression generation and recognition are due to historic differences in social relationships. Males socialised more with kin and make greater use of displays of

dominance (e.g., aggression), whereas females were more likely to interact with non-kin and maintain social relationships using displays of submissiveness (e.g., crying). Whilst historical roles may seem irrelevant today, the effect of evolutionary pressures are slowly changing, and still thought to provide a basis for contemporary gender differences in expression behaviour [1]. Applying this to pain, we might expect females to display and recognise pain more than males, as well as use non-kin social support networks as a coping strategy [38; 67].

Social factors, including stereotypical beliefs, can also account for gender differences in communication [7; 9; 24; 78]. Social learning theory informs us that males and females are socialised from an early age to display emotions in different ways [10; 45; 65]. Being emotionally expressive is often considered less acceptable in males, where stoic behaviours are reinforced. Although not an emotion, pain does share common features, including the mechanisms that underpin expression and identification [13]. This would lead us to expect pain expressions to be more frequent and less likely to be suppressed in females, and that expectations around gender roles will shape male and female pain behaviours [7].

## **5. Gender differences in nonverbal emotion communication**

Emotional communication research also highlights gender effects, where male-female differences are found in the encoding and decoding of nonverbal expressions [23; 25; 69]. Females are generally more emotionally expressive than males, in that women generate more facial expressions and emotional utterances (e.g., laughing, crying). Gender differences are found in the spontaneous generation of certain expressions: females are found to smile more than males [41]. Although fewer investigations have examined gender differences in the generation of body

emotions, clear differences exist in body movements (e.g., walking), and so it likely male-female differences will be found.

As well as encoding, there are gender differences in the decoding of nonverbal expressions. Identification of a person as either male or female can be reliably made through non-verbal cues, such as adult vocalisations and body movements [51; 61]. Like expression generation, females seem better at recognising emotions in the face [23; 45], and in vocalisations [8]. Females voices are perceived as being more friendly and pleasant, whereas males are considered to be more dominant [2; 25]. Interestingly, the type of emotion may be important, in that some find males are better at recognising anger in facial expressions [18]. Recognising emotions in body movements has not been extensively investigated, although some report females are better at recognising body-encoded emotions [73].

## **6. Gender differences in the nonverbal communication of pain**

As there are gender differences in the generation and recognition of nonverbal expressions, and pain shares many of these core characteristics, it would seem logical to consider whether gender impacts on the nonverbal communication of pain. However, those interested in sex, gender and pain have not fully considered nonverbal communication, whereas those working within a nonverbal pain framework do not routinely examine for gender differences [35; 36; 39]. Despite this, closer inspection of the literature reveals patterns that may be of interest to both research groups (see Figure 2).

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Figure 2 about here  
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Whilst there are a few examples of male-female encoding differences in children [20], there are inconsistencies [47; 50], and little evidence for gender differences in the generation of facial expressions of pain in adults [e.g., 40; 52; 54; 62; 72]. Thus, in contrast to the general nonverbal expression literature, gender differences are not consistently found in the generation of facial expressions of pain. However, there is more consistent evidence for gender-related effects in the decoding of facial expressions [27; 28; 53; 66]. The same pain expression can be differentially interpreted by observers depending on patient gender [28; 66]. Interestingly, the role of gender in the encoding and decoding of pain may not be the same within other nonverbal channels. Although there are few studies outside a facial expression paradigm, men and women are known to differ in the encoding [5; 19; 34; 59] and recognition [5; 60; 64] of pain through vocal and body channels.

There are also insights from gender research that help us consider how the gender-context might impact on pain communication [12; 26; 35; 36]. Interpersonal interactions between family members are important, in that the gender of both patient and spouse impacts on pain [42; 64]. There is also evidence that experimental and clinical pain reports are differentially affected by the presence of a same- or opposite-gender observer [32; 70; 71]. Physician-patient interactions require good interpersonal skills to elicit and provide core information, and there are gender differences in the nonverbal behaviours exhibited during such transactions [26]. The relevance of gender-context becomes even more interesting when combined with the knowledge that patient gender affects how healthcare providers assess and treat pain [6; 28; 46; 55]. However, such studies are few in number, and there are inconsistencies [33; 57; 76]. Nevertheless, stereotypical beliefs associated with how men and women are expected to behave when in pain provide an

explanation for gender effects [37; 58; 77]. Additionally, these gendered interpersonal interactions may partly be mediated through nonverbal processes, in that male-female differences in the generation and interpretation of pain cues may help explain why such gender-related effects occur.

Despite these interesting observations, there is a dearth of research bringing these two fields together. The failure to fully appreciate sex and gender in pain communication is a missed opportunity for those interested in these specific areas, as well as the wider pain community.

## **7. Future directions for sex/gender research**

In terms of next steps, there is a need to develop better, theoretically informed, models of sex/gender aspects of pain communication. For example, are the drivers behind interpersonal communication the same for men and women, and how do they influence pain behaviour? Theory helps us make clear predictions as to how and why individual differences may be important. Just adding sex/gender to a study without thinking about the reasons why this may be important is dissatisfying and we need a more mature approach.

There are also foundational research questions that deserve to be answered, which will help develop theory, including:

- Are there consistent sex/gender differences (and similarities) in the encoding and decoding of pain expressions? Evidence from facial expressions of pain suggests a gender-related decoding, rather than encoding bias.
- Are sex/gender effects consistent across different channels of nonverbal communication e.g., facial, vocal, body expressions? If so, how do these differences in pain communication compare to other core emotions?



- Is there variation in the effect sex/gender has on verbal and nonverbal behaviours? If so, what would this tell us about the different processes involved in pain communication e.g., automatic vs. controlled [21], as well as the nature of sex/gender differences?
- How do these potential individual differences in pain communication impact on pain assessment and management practice? Specifically, how does gender variability in pain expression contribute to health care decisions? To what extent do stereotypical gender expectations around verbal and nonverbal behaviours have a detrimental effect on pain management?

By embracing the wider social emotive literature it is also possible to identify themes that could be developed to expand our understanding of psychosocial factors in sex, gender and pain. Examples include:

- *Multimodal communication*: Emotional expressions usually occur through multiple channels of communication, with researchers starting to combine channels to see how they impact on perceptual experiences. Pain is also communicated through multiple channels, leading us to consider how multiple channels of pain expression are processed [3], and whether the integration of information occurs in a similar way in men and women [68];
- *Social-context*: Different contextual cues influence how emotional expressions are processed [4; 11]. Given that gender can be considered a social context (e.g., same/different gender dyads), we could consider the role that gender context has in pain communication. Context also tells us about wider cultural attitudes and influences around pain expression, including attitudes to care.
- *Social-cognitive neuroscience*: Advances in our understanding of neural processes involved in social-cognition has led to developments in pain-related

areas such as empathy and emotional contagion [48; 63]. Gender differences have also been found in these social-cognitive processes. Does this also help understand gender-related variation in pain?

## **8. Conclusions**

Interpersonal interactions, including those involving pain, are considered a complex dynamic exchange of information between those expressing and those receiving nonverbal cues. A nonverbal emotion communication approach provides a potentially useful framework and set of methodologies for considering wider social and interpersonal interactions. A focus on sex and gender differences can provide a useful contextual focus that will help explain why there are individual differences in the pain experience. By bringing these two areas together, it is possible to generate novel research questions that may help further our understanding as to why there is variation in pain between men and women and how best to manage it. More generally, this approach also highlights the need to consider the wider context in which pain occurs, and that individual differences such as gender reflect wider social-cultural attitudes and expectations around care.

## **6. Conflict of interest statement/Acknowledgements**

The author has no known conflicts of interest associated with this work.

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Figure 1: The role of sex and gender in pain communication

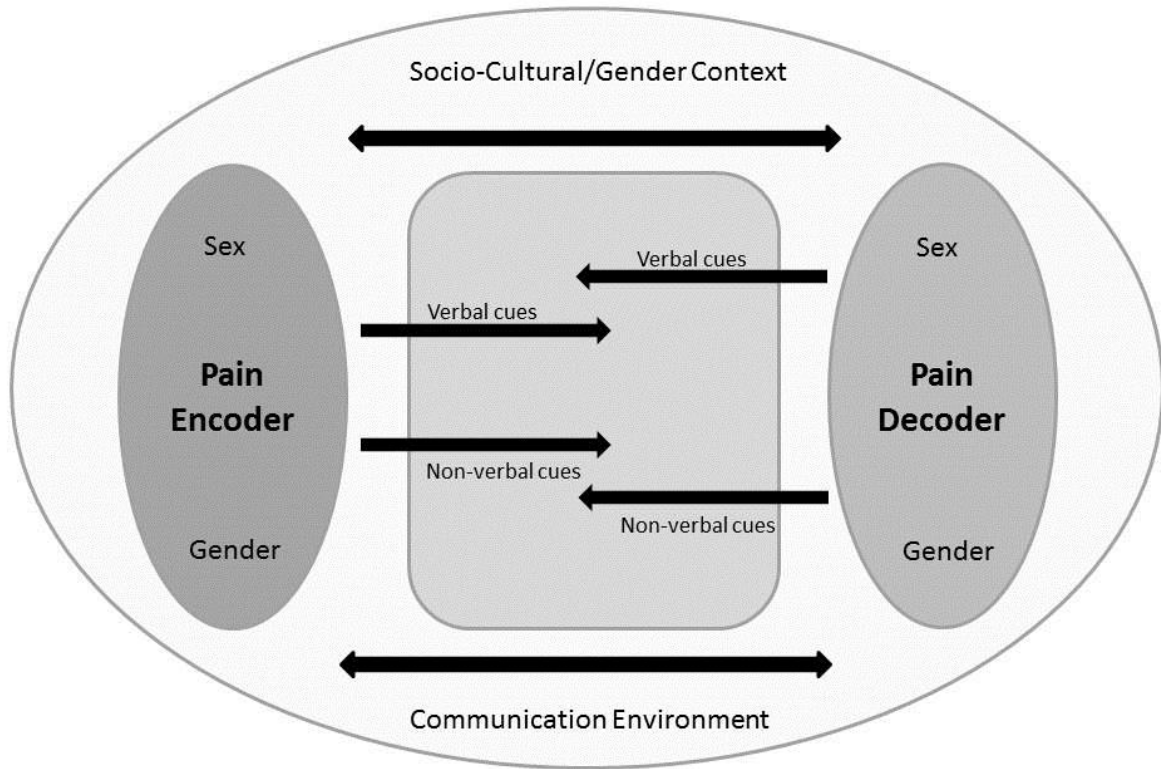


Figure 2: Areas of interest that sex/gender and nonverbal communication research could consider together

