

Commentary

Children give different self-reports of pain intensity to different people: The influence of social display rules

Judith Versloot, Carl L. von Baeyer and Kenneth D. Craig

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Introduction

Everybody hides their true feelings on occasion by masking them with fabricated expression or by blocking expression. This is no less the case with the expression of pain. As Anand and Craig (1996) noted, relationships between feeling pain and reporting pain are context dependent. The potential for expressions of pain inconsistent with felt pain leads to questions about how one should interpret expressions of pain as well as a search for improved assessment. Understanding how and when expressions of pain may differ from the internal experience of pain is particularly important given the subjective nature of pain and the necessary reliance on self-report of pain as a primary tool for pain assessment.

Investigators are asking when and why people modulate expression of emotions and pain and what the implications are for the person in pain and significant others. One source of variability in expressions of painful distress is the social context. We examine below how expressive behavior varies with the audience observing these actions. Effective pain assessment requires an understanding of how these influences affect pain expression.

Ancient biological origins of dispositions to be expressive or to suppress expression can be observed (Williams, 2002). Non-human mammals vary in tendencies to display pain in the presence of predators (de Waal, 2010) or conspecifics (others from the same species) who are littermates or

strangers to the animal (Langford et al., 2006). For example, when two male mice who were strangers to each other were placed together and one of them received a painful stimulus, that mouse showed less pain behavior in comparison to a mouse paired with a familiar littermate or experiencing pain in isolation. This situational variability or plasticity is instructive as pain as an adaptive response system was well-conserved in the course of evolution. It demonstrates the complexities of biological dispositions interacting with social and environmental factors to suppress or increase pain expression.

The concept of display rules is useful in understanding the impact of social contexts and social norms in human pain expression. *Display rules* are culturally defined norms and values governing the expression of emotions in particular situations. The range of factors that govern display rules include (a) personal characteristics of the person manifesting pain, such as age, sex and ethnic identification (Gnepp & Hess, 1986; Fuchs & Thelen, 1988; Zeman & Garber, 1996; Aloise-Young, 1993), as well as unique personal histories, including personal health experiences (Pillai Riddell et al., 2004) and family background (Goubert et al., 2011), and (b) characteristics of the context, including stable and immediate features of the physical and social setting (Hadjistavropoulos et al., 2011). These situate people within social contexts and interact with immediate demands, for example, whether observations are made in a medical or

family setting and whether the audience is a parent, peer, or stranger (Fuchs & Thelen, 1988; Zeman et al., 2006).

Developmental and life course changes would be expected. Newborns typically display pain relatively spontaneously without attending to the context, whereas more cognitively and socially mature children would be increasingly sensitive to social contingencies. Nevertheless, even early in life, the social context is important: maternal interventions known to influence pain expression, such as breast feeding (Shah et al., 2006) or bodily contact (Johnston et al., 2003) and other sources of influence, such as exposure to pain (Taddio et al., 2002) or childhood maltreatment (McCrorry et al., 2012) provide the basis for learning the importance of the social context. The main focus of this article is to identify social display rules governing pain expression in children in a specific context, the dental setting. We begin with a brief description of an illustrative study in which self-reports of pain were elicited by different people (i.e. the parent and the dentist). Afterwards an overview is provided of important social, developmental and contextual factors that influence the display of pain.

Illustrative study

A study by Versloot et al. (2004) examined the influence in the dental setting of different audiences on self-report of pain intensity provided by 50 children (31 girls) between 4 and 8 years of age (M

$= 5.6, SD = 1.2$). After the child had calmed from an oral injection of local anesthetic (e.g. after a sip of water), the dentist asked the child if he/she felt it “when his/her tooth was made to go to sleep?” and if so, “how much pain he/she felt?”. When the child was reunited with the parent following the injection, the parent again asked the same questions. In each case, the pain was rated on an ordinal verbal descriptor 4-point scale ranging from 1 (*No pain*), 2 (*A little pain*), 3 (*Moderate pain*) to 4 (*A lot of pain*). The two pain reports of the child—to the dentist and to the parent—showed a moderately strong correlation ($r = .65, p < 0.01$). However, in 40% of the cases children gave a numerically different rating to the dentist than to the parent, with the report to the parent more often indicating greater severity, a statistically significant effect. This discrepancy was the largest for younger children. There were several non-significant trends (see Table 1), for both boys and girls and both high- and low-anxious children. Although order effects could not be excluded, it appeared that audiences were an important determinant of the magnitude of pain reported, at least for a substantial portion of the children. The dental office is often a threatening setting for young children, particularly those with no previous or positive experience with dentistry. Children might not feel safe enough in the dental office to fully express their pain levels, or do not recognize the dentist as a potential caregiver if they were to report pain.

Table 1
Similarity of the pain rating to the dentist and the parent

| | N | Same rating | Higher to dentist | Higher to parent | <i>p</i> * |
|-------------|----|----------------------|---------------------|----------------------|------------|
| Total group | 50 | 60% (<i>n</i> = 30) | 12% (<i>n</i> = 6) | 28% (<i>n</i> = 14) | 0.04 |
| Age | | | | | |
| 4-5 years | 21 | 52% (<i>n</i> = 11) | 5% (<i>n</i> = 1) | 43% (<i>n</i> = 9) | 0.01 |
| 6-8 years | 29 | 66% (<i>n</i> = 19) | 17% (<i>n</i> = 5) | 17% (<i>n</i> = 5) | 1.0 |
| Anxiety | | | | | |
| Low | 21 | 62% (<i>n</i> = 13) | 9% (<i>n</i> = 2) | 29% (<i>n</i> = 6) | 0.18 |
| High | 28 | 61% (<i>n</i> = 17) | 11% (<i>n</i> = 3) | 28% (<i>n</i> = 8) | 0.07 |

*Wilcoxon Signed Ranks Test, *p* for score given to dentist vs. to parent

What do we know from the literature?

Social expectations. The expression of pain is influenced by numerous intrapersonal and interpersonal factors such as personal history, biological constraints and the context (Hadjistavropoulos & Craig, 2002; Versloot & Craig, 2009). Children manage their expressive displays, in part, by learning a set of social display rules appropriate to their familial and cultural background (Fuchs & Thelen, 1988). Saarni (1979) suggested that children acquire these cognitive rules or guidelines because interpersonal consequences vary with the display of emotions and other states such as pain. These rules are posited as cognitive mediators between the covert experience of emotions or pain and their overt expression. Some features of pain expression would be amenable to greater personal control (Hadjistavropoulos & Craig 2002; Craig et al., 2010; McCrystal et al., 2011), intentional or unintentional, for example, self-report, whereas other more reflexive or automatic manifestations would require more exertion to suppress.

Development of display rules. Variations in affective display are posited to occur as a function of expectancies regarding what is socially appropriate in particular situations, as well the child's appraisal of how to maximize personal benefits. One could argue that when children expect a positive outcome for themselves as a result of a given action they will be more likely to display an experienced state and not engage in inhibition of more automatic displays. When there is an expectation of a negative outcome, inhibitory modulation would be necessary, leading to greater incongruence between experienced and expressed states. The development of display rules can be explained from both an evolutionary and learning perspective. For example, a person can decide to express pain in the presence of a particular observer because the observer is identified as a potential caregiver (evolutionary explanation), or because of previous positive experience with expressing pain in the presence of that observer (social explanation; Williams, 2002). The expected outcome of a situation would also be influenced by aspects of cognitive appraisal such as catastrophizing.

Children low in catastrophizing tend to suppress their expression of pain in the presence of a stranger, possibly because the response of a stranger is uncertain and from an adaptive perspective it is safer to conceal one's real feelings (Vervoort et al., 2008).

The acquisition of display rules for pain and emotion is expected to follow a pattern consistent with cognitive developmental theories of cognitive/affective maturation and life experience (Saarni, 1979). Older children are expected to be able to use strategies that permit greater regulation of their pain expression (Fuchs & Thelen, 1988). While these rules may be transmitted initially within the family, they are likely to be shaped and reinforced throughout childhood by others, including teachers, health care providers and peers. Children who are able to play by the rules (e.g. show the appropriate positive instead of a negative expression after receiving an undesirable gift) were rated as more favorable by both teachers and peers (McDowell & Parke, 2005).

Although gender differences did not emerge in the illustrative study, possibly due to small sample size, the expression of pain does appear to be differentially socialized in females and males. Girls report that they are more likely to express their pain than boys (Zeman & Garber, 1996). Furthermore, sex differences can also be found in the methods used for emotion regulation. Girls tend to substitute one emotional display for another, whereas boys tend to be more skilled at neutralizing or suppressing emotional expression (Zeman & Garber, 1996). The reasons for these sex differences are not established; females may be socialized to express pain and emotion more openly than males, or may experience pain more intensely than males for biological reasons (Fillingim et al., 2009).

In general, children seem to be fairly successful in controlling facial actions during a painful situation when asked to do so (Larochette et al., 2006). They can, to a certain degree, either fake pain expression or suppress it, with the latter accomplished more successfully (Boerner et al., 2013). When suppressing their pain expression children tend to stifle their response (as opposed to simulating an incongruent state). Parents as a consequence can get confused between children's

suppressed pain expression and their neutral expression. Children are cognizant of the usefulness of variable pain expression, dissembling to get attention or get out of school or suppressing expression to avoid embarrassment in front of their peers or not to worry their parents.

Display in the presence of others. Studies with adults indicate that expressive display of pain tends to be suppressed in the presence of others, though most of the studies have examined the mere presence of parties who could be construed as strangers. The mere presence studies with strangers have not been replicated with children; however, the presence of another person generally increases children's use of display rules (Zeman & Garber, 1996). Children undergoing painful procedures show an increase in their overt distress in the presence of a parent (Shaw & Routh, 1982; Gonzalez et al., 1989). Parents' verbal behaviors can indeed strongly influence children's pain complaints, distress and coping behavior. At the same time training parents in coping promoting behavior can help children cope with painful procedures (Chorney et al., 2009; Williams et al., 2011). It is noteworthy that children prefer to have parents present during painful medical procedures. A review on the effect of parental presence on children's, parents and health professional's distress and affect during painful procedures of the child showed mixed results with some of the studies favoring parental presence. Parents themselves showed lower or equal levels of distress when present compared to being absent during their child's procedures (Piira et al., 2005). Clinicians on the other hand are ambivalent when it comes to parental presence, with some expressing concern that parental presence could increase the likelihood of more vigorous displays of distress or that it makes the clinicians themselves nervous (Bauchner et al., 1991; Waseem & Ryan, 2003). The review, however, did not find evidence for increased technical complications nor elevated staff anxiety for health professionals attending to children with or without their parents present (Piira et al., 2005). Furthermore, children report that they would be more likely to control their expressions of pain in the presence of a peer than when they were alone or with either their mother or father, perhaps because

they perceive peers to be less accepting of pain displays than parents (Zeman & Garber, 1996). In general, children increase their use of display rules in the presence of others in contrast to when alone, particularly if the other is an authority figure such as a teacher (Underwood et al., 1992) or someone expected to react negatively.

Children's pain expression is also influenced by interactions with health care providers. In an observation study it was found that nurses, when interacting with children on a pediatric orthopedic ward, actively discouraged the display of pain. The nurses often construed such expressions as unreal, unwarranted, or not deserving help. Children who did not complain of pain were described as very good patients, while those who showed a lot of pain were considered by nurses to be malign, unmotivated, poor copers, or even engaged in dramatic acting. These reactions from nurses increased children's distress. Faced with nurses' denial of their pain, the children intensified their expression of pain in order to be believed, to obtain analgesics, or to attempt to avoid a feared procedure (Byrne et al., 2001).

Conclusion

Social display rules play an important role in governing pain expression in children. Children, consciously or unconsciously, adjust their pain expression as a result of the expected consequences of their pain display, based on self-protective reasons (to avoid negative consequences, to solicit care or protection) and other-protective reasons (not to hurt others' feelings, to warn others of danger).

The expected functional consequence of expressing distress to the parent or the dentist reasonably differs within children resulting in a discrepancy in self-reported pain. Pain expression is most pronounced in the presence of significant others from whom support and assistance is expected or has been experienced on previous occasions. In dentistry, for example, this most often is the parent, especially for younger and more anxious children. Older children perhaps realize or have the experience that support may be available from the dentist as well. The impact of life experience on cognitive control over different modalities of expression is uncertain. It could be

interesting to study whether display rules have a unique influence on the self-report of pain versus more automatic forms of nonverbal expression.

This short communication only allows space to highlight and hypothesize some of the factors that influence the regulation of the expression of pain. Biological factors such as age and sex, psychological factors such as expectations and the capacity to self-regulate expression, and social factors such as the audience and other contextual features, have been found to mediate the relationship between covert experience and the overt expression of pain. It is difficult to give straightforward advice on the most reliable way to elicit a child's self-report on pain since we cannot know, let alone control for, all the influencing factors. However, when assessing pain in children for research purposes it would be helpful to include observational as well as self-report measures of pain, thereby diminishing the impact of voluntary control of expression. Self-report is probably self-regulated earlier in development than are more automatic behavior expressions. Thus, for clinical purposes, being aware of the influence of display rules on children's pain expression and its changes over the course of development can certainly help in the recognition and assessment of pain by others. Asking children to report on their pain is best done

by someone they trust, thereby providing an environment that feels safe enough for children to express their pain in a way that will elicit appropriate care.

Judith Versloot, PhD
Li Ka Shing Knowledge Institute of St. Michael's Hospital, Toronto, ON, Canada
email: j.versloot@utoronto.ca

Carl L. von Baeyer, PhD
Departments of Psychology and Pediatrics, University of Saskatchewan, Saskatoon, SK, Canada; Department of Clinical Health Psychology and Department of Pediatrics and Child Health, University of Manitoba, Winnipeg, MB, Canada

Kenneth D. Craig, PhD
Department of Psychology, University of British Columbia, Vancouver, BC, Canada

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