



## Topical review

## Facing others in pain: the effects of empathy

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## 1. Introduction

A wealth of research addresses intra-individual determinants of pain, distress and disability. In contrast, limited attention has been devoted to the interpersonal domain. It is well established that significant others have an impact upon the experience of pain and associated suffering (Romano et al., 2000). Largely unexplored are the effects of pain upon the experience of observers themselves. Facing others in pain elicits a varied range of responses from ignoring to distress, compassion, and inclinations to comfort or help. In this review we will argue that understanding the effects of facing others in pain requires an understanding of empathy. After defining the construct and exploring relevant theories, we apply empathy to pain. We discuss how and when empathy may foster distress and inclinations to help, and provide suggestions for future research.

## 2. Definition of empathy

Most definitions of empathy have a core tenet that empathy is about a sense of knowing the personal experience of another person, a capacity which Ickes (2003) dubbed ‘mind-reading’. Most definitions also include the position that this sense of knowing is accompanied by affective and behavioural responses (Davis, 1996). Although simple and operational, this definition requires further qualification. First, we contend that empathy is not exclusively human (Preston and de Waal, 2002). Second, the inferred experience of the other may comprise thoughts, feelings or motives. Third, empathy may manifest itself in various ways. Some of these may be automatic and implicit. Others might be explicit and depend upon the intentional and effortful use of cognitive processes. Fourth, affective responses to facing another person may often, but not always, entail sharing that person’s emotional state. In sum, empathy is best construed as a sense of knowing the experience of another person with cognitive, affective and behavioural components. Fig. 1 illustrates these components of empathy applied to pain.

## 3. Models of empathy

An influential account of empathy in clinical models of therapy was proposed by Carl Rogers (1957). He concluded that accurate empathy is a necessary condition for therapists attempting to help others. He was convinced that therapists

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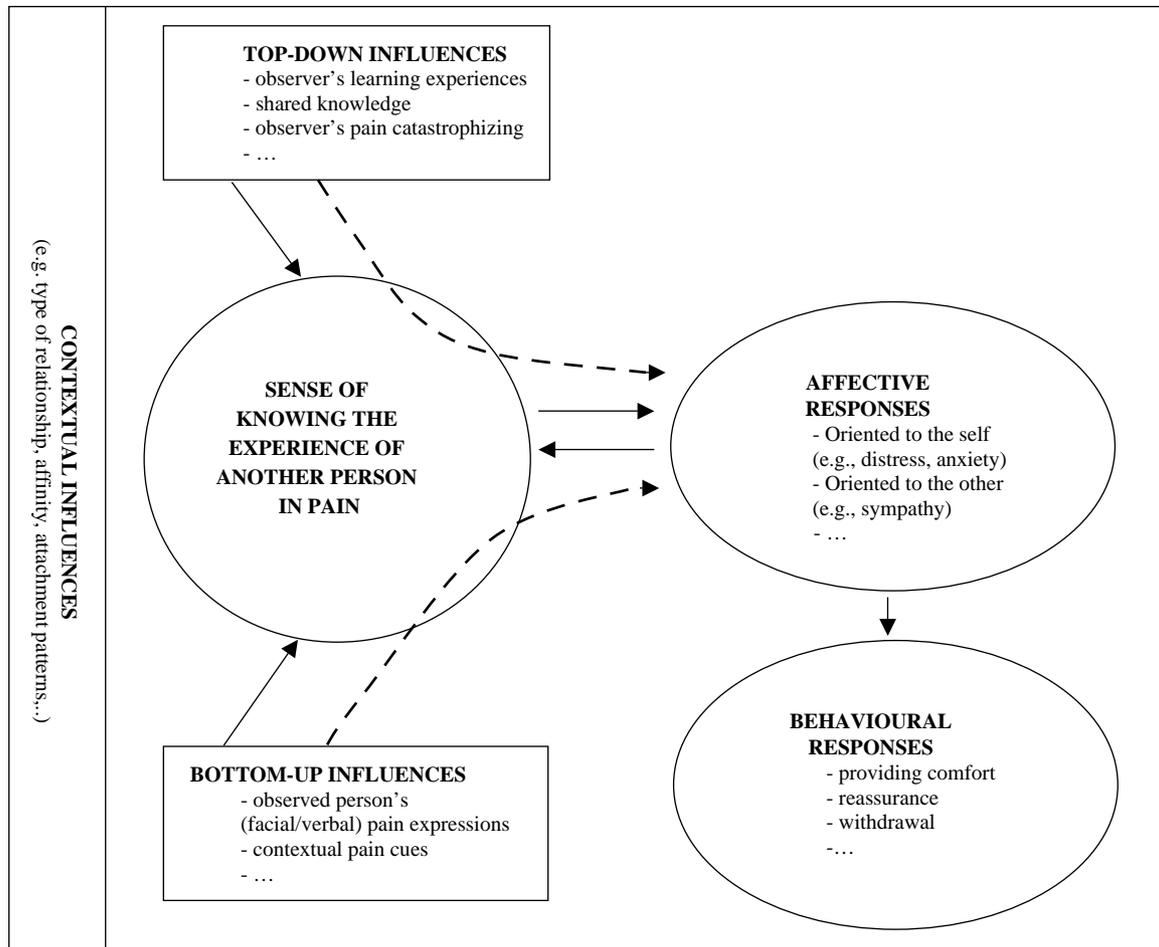


Fig. 1. Bottom-up and top-down factors influence the sense of knowing the experience of another person in pain and associated affective responses. Reciprocal influences between the sense of knowing and the affective responses influence behavioural responses.

had to sense the patient's private world as if it were his/her own, but without ever losing the 'as if' quality. The latter was needed to avoid becoming overinvolved and overwhelmed by the patient's experience.

Although Rogers' account was helpful in describing how empathy fosters therapeutic change, the underlying processes of empathy remained unspecified. These processes were described in an integrative model by Preston and de Waal (2002). In their Perception-Action Model (PAM), empathy was recognized as an evolved function, with precursors, such as mimicry and imitation, readily found in apes, rats, and other nonhuman social mammals (Preston and de Waal, 2002). This allows for vicarious learning about dangers and for prosocial behaviour towards conspecifics (Williams, 2002). Fundamental to empathy was the basic premise that perception of another person's behaviour automatically activates representations of the personal experiences associated with that behaviour, unless inhibited. In support of the PAM, functional magnetic resonance imaging (fMRI) studies have revealed a 'mirror neuron/circuit' system. Studies indicate that the neural structures engaged when processing and controlling executed actions, felt sensations and emotions, are also active when these actions, sensations and emotions are observed

(e.g. Gallese et al., 2004). Within this account, it makes intuitive sense that the experience of the observer resembles that of the observed person. The experience is however not identical. Personal and vicarious experiences differ physiologically (Craig, 1968). The observer's affective responses to facing another's distress may consist of responses oriented to the self (e.g. distress) and responses oriented to the other (e.g. sympathy). These two types of affective responses may sometimes occur together, but are qualitatively distinct. They have different motivational behavioural consequences. Other-oriented responses may instigate an altruistic motivation to help the other, whereas self-oriented responses may imply an egoistic motivation to reduce personal distress (Batson, 1991). In sum, humans and other social species appear biologically prepared to intuitively experience the emotional distress of others, but there are limits to the extent to which the experiences are isomorphic.

#### 4. Empathy in the context of pain

Few studies have directly examined empathy for pain. Notable exceptions are fMRI studies providing evidence that observing somebody in pain activates similar neurons

as if the observer were feeling pain himself (Botvinick et al., 2005; Jackson et al., 2005). Lack of absolute concordance is reflected in the findings of Singer et al. (2004) who observed that only the affective and not the sensory components of the pain network were activated. It seems then that facing others in pain most often elicits affective distress in the observer (Craig, 1968). However, several variables may moderate this experience of distress. For instance, whether distress is felt may depend upon contextual factors such as the nature of the interpersonal relationship. Englis et al. (1982) found that seeing somebody in pain elicited distress when the observer had a cooperative relationship but not when the observer had a competitive relationship.

Empathy depends upon bottom-up processes (i.e. features of the incoming stimulus) and top-down processes (i.e. features of the observer's knowledge and other dispositions) (see Fig. 1). Perhaps the most powerful bottom-up determinant of the empathic sense of another's pain would be the observed person's facial expression of pain (Williams, 2002; Botvinick et al., 2005). Research has shown that humans, even from an early age, infer pain using the distressed person's facial expressions (Deyo et al., 2004). Moreover, any verbal or nonverbal behaviour distinctively related to pain may serve as a cue to be picked up by observers. It is useful to note that not all observable behaviours have communicative intent (Danchin et al., 2004). Involuntary reactions during pain serve as powerful cues (Hadjistavropoulos and Craig, 2002). It is even possible that attempts to hide pain may function as cues for pain in others (Williams, 2002).

Empathy is also profoundly affected by top-down processes. Prior personal experiences with pain generally lead to more readily elicited empathic responses when observing somebody in similar situations, even in the absence of pain behaviour (Jackson et al., 2005). As well, the propensity of humans to share emotional experiences with intimates and friends may result in a shared knowledge that facilitates empathy (Rimé et al., 2004). Finally, the observer's beliefs about whether the pain is minor, controllable, or (life) threatening may affect empathy. This idea urges researchers not only to take into account the beliefs about one's own pain but also beliefs about the pain of somebody else (Cano et al., *in press*). Thus, cognitive processes related to intentionality, expectancies, decision-making, and interpersonal judgment are implicated in empathy.

Bottom-up and top-down processes deserve further consideration when examining whether empathy can be characterized as a sense of knowing the experience of the other that matches that experience. Ickes (2003) showed that accuracy in interpersonal judgments is far from perfect. This also appears true for empathy for pain. A substantial literature indicates a tendency to underestimate the pain of others (Chambers et al., 1998), although some studies reported overestimations (Bennett-Branson and Craig, 1993; Redinbaugh et al., 2002). The next paragraphs

explore the origins of (mis)matches, and their affective and behavioural consequences for the observer, in particular distress and helping behaviour.

Consistent with Rogers (1957), accurately perceiving the other's pain or distress (empathic accuracy) often is considered fundamental to the process of delivering effective care to people in pain. Equally important will be whether the observer is able to differentiate his/her sense of knowing of the other's personal experience and his/her personal affective response to this (in particular self-oriented emotions such as distress). When successful in differentiating, we predict that other-oriented emotions such as feelings of intimacy and closeness will increase. A mother may perfectly sense a child's pain and distress, acknowledge the child's feelings and 'calmly' kiss the hurt knee. When unsuccessful in differentiating, the observer may get overwhelmed by his/her distress and a cascade of further distress and helplessness is likely in both the observer and the significant other (Cano et al., *in press*).

Underestimations of pain carry the risks of the person in pain feeling misunderstood and receiving inadequate care, consequences potentially devastating to the person's health care. Pain may be present but missed by others ('misses'). Underestimation of chronic pain may reflect the reduced availability of pain signals and cues in comparison with acute pain, as vigorous pain displays require exacerbation of chronic pain (Hadjistavropoulos and Craig, 1994). In chronic pain there also tend to be fewer contextual cues for pain (e.g. evidence of accident or wounds). Moreover, chronic pain patients may feel inhibited from talking about their pain and frustration, because they want to be seen as functioning well, or because they anticipate misunderstanding and stigmatization (Morley et al., 2000; Herbet and Rimé, 2004). Yet unexplored has been the proposition that observers underestimate observed pain as a way to cope with their own distress (see Batson, 1991), although this is often posited as a mechanism used by clinicians exposed to frequent stress and trauma in others, for example, in critical care and burn units (von Baeyer et al., 1984; Prkachin et al., 2001). One may expect the mechanism of motivated inaccuracy to play when pain is chronic and/or attempts to help prove unsuccessful. By underestimating pain observers may keep distress and frustration within upper limits. In line with this idea are the findings of Cano (2004), who observed that partners of patients in chronic pain may become less solicitous as a result of discounting their partner's pain over time.

Also overestimations of pain and distress have risks. Pain may be minimal or even absent, but the observer believes it is present ('false alarm'). The reaction of the observer may elicit in the other a re-evaluation of the pain as more serious than initially thought, and pain interventions often carry risks of unwanted side effects. Worthwhile to consider is the suggestion that comfort and help may become 'over'-protective, in that normal and independent functioning is hampered. Overestimations of pain and distress are likely to

occur in contexts with plenty of pain cues (emergency rooms, blood, wounds). Also top-down influences may be substantial. The beliefs the observer has about the pain in the other may lead to overestimations (Chibnall and Tait, 1995). Pain that is considered medically explained and life-threatening (e.g. cancer pain) has been found to be related to overestimations (Redinbaugh et al., 2002). We also conjecture that catastrophizing about the pain of others will lead to overestimations of pain and distress. Just like intra-individual research on pain catastrophizing, it may be that those who catastrophize about the pain of others misinterpret ambiguous cues and signals, and are hypervigilant for pain cues and signals in others (see Crombez et al., 2005).

## 5. Conclusions

The survival value of pain lies in the actions taken to deal with the pain situation. These might involve the actions of the person in pain (e.g. protection, escape) or the actions of observers (e.g. assistance, care). Empathy represents a vehicle through which the adaptive outcome of an observer's behaviour toward the person in pain might be achieved. As evidence accumulates on the interpersonal functions of pain, conceptualizations of pain as a predominantly sensory system are challenged. Adequate models of pain will need to account for the personal as well as the interpersonal processes that are mobilized in response to pain. It is only by broadening our perspective on the multiple dimensions of the pain system that we will be able to come closer to understanding how such a system might have evolved, how it functions, and how to design interventions that will provide the most benefit to persons suffering from pain.

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## References

- Batson CD. The altruism question: toward a social-psychological answer. Hillsdale, NJ: Erlbaum; 1991.
- Bennett-Branson SM, Craig KD. Postoperative pain in children: developmental and family influences on spontaneous coping strategies. *Can J Behav Sci* 1993;25:355–83.
- Botvinick M, Jha AP, Bylsma LM, Fabian SA, Solomon PE, Prkachin KM. Viewing facial expressions of pain engages cortical areas involved in the direct experience of pain. *Neuroimage* 2005;25:312–9.
- Cano A. Pain catastrophizing and social support in married individuals with chronic pain: the moderating role of pain duration. *Pain* 2004;110:656–64.
- Cano A, Leonard MT, Franz A. The significant other version of the Pain Catastrophizing Scale (PCS-S): preliminary validation. *Pain*; in press.
- Chambers CT, Reid GJ, Craig KD, McGrath PJ, Finley GA. Agreement between child and parent reports of pain. *Clin J Pain* 1998;14:336–42.
- Chibnall JT, Tait RC. Observer perceptions of low back pain: effects of pain report and other contextual factors. *J Appl Soc Psychol* 1995;25:418–39.
- Craig KD. Physiological arousal as a function of imagined, vicarious and direct stress experiences. *J Abnorm Psychol* 1968;73:513–20.
- Crombez G, Van Damme S, Eccleston C. Hypervigilance to pain: an experimental and clinical analysis. *Pain* 2005;116:4–7.
- Danchin E, Giraldeau LA, Valone TJ, Wagner RH. Public information: from nosy neighbors to cultural evolution. *Science* 2004;305:487–91.
- Davis MHA. Empathy: a social psychological approach. Boulder: Westview Press; 1996.
- Deyo KS, Prkachin KM, Mercer SR. Development of sensitivity to facial expression of pain. *Pain* 2004;107:16–21.
- Englis BG, Vaughan KB, Lanzetta JT. Conditioning of counter-empathetic emotional responses. *J Exp Soc Psychol* 1982;18:375–91.
- Gallese V, Keysers C, Rizzolatti G. A unifying view of the basis of social cognition. *Trends Cogn Sci* 2004;8:396–403.
- Hadjistavropoulos HD, Craig KD. Acute and chronic low back pain: Cognitive, affective and behavioral dimensions. *J Consult Clin Psychol* 1994;62:341–9.
- Hadjistavropoulos T, Craig KD. A theoretical framework for understanding self-report and observational measures of pain: a communications model. *Behav Res Ther* 2002;40:551–70.
- Herbette G, Rimé B. Verbalization of emotion in chronic pain patients and their psychological adjustment. *J Health Psychol* 2004;9:661–76.
- Ickes W. Everyday mind reading. Understanding what other people think and feel. New York: Prometheus Books; 2003.
- Jackson PL, Meltzoff AN, Decety J. How do we perceive the pain of others? A window into the neural processes involved in empathy. *NeuroImage* 2005;24:771–9.
- Morley S, Doyle K, Beese A. Talking to others about pain: suffering in silence. In: Devor M, Rowbotham MC, Wiesenfeld-Hallin Z, editors. Proceedings of the ninth world congress on pain, progress in pain research and management, vol. 16. Seattle, WA: IASP; 2000. p. 1123–9.
- Preston SD, de Waal FBM. Empathy: its ultimate and proximate bases. *Behav Brain Sci* 2002;25:1–72.
- Prkachin KM, Solomon P, Hwang T, Mercer SR. Does experience affect judgements of pain behaviour? Evidence from relatives of pain patients and health-care providers *Pain Res Manage* 2001;6:105–12.
- Redinbaugh EM, Baum A, DeMoss C, Fello M, Arnold R. Factors associated with the accuracy of family caregiver estimates of patient pain. *J Pain Symptom Manage* 2002;23:31–8.
- Rimé B, Herbette G, Corsini S. The social sharing of emotion: illusory and real benefits of talking about emotional experiences. In: Nyklicek I, Temoshok LR, Vingerhoets JJM, editors. Emotional expression and health. London: Harwood Academic Press; 2004.
- Rogers C. The necessary and sufficient conditions of therapeutic personality change. *J Consult Psychol* 1957;21:95–103.
- Romano JM, Jensen MP, Turner JA, Good AB, Hops H. Chronic pain patient-partner interactions: further support for a behavioral model of chronic pain. *Behav Ther* 2000;31:415–40.
- Singer T, Seymour B, O'Doherty J, Kaube H, Dolan RF, Frith CD. Empathy for pain involves the affective but not sensory components of pain. *Science* 2004;303:1157–62.
- von Baeyer CL, Johnson ME, McMillan MJ. Consequences of nonverbal expression of pain: patient distress and observer concern. *Soc Sci Med* 1984;19:1312–24.
- Williams AC de C. Facial expression of pain: an evolutionary account. *Behav Brain Sci* 2002;25:439–88.