Psychology of Pain, Hypervigilance and Attention to Pain

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Synonyms

Heightened vigilance; overallertness; heightened attention

Definition

Hypervigilance to pain or somatic sensations is the excessive tendency to attend to pain/somatic sensations, or the excessive readiness to select pain-related information over other information from the environment. In the context of pain, hypervigilance is assumed to be initiated and maintained by its immediate threat value. Pain-related fear and catastrophic thinking have often been found to be strong predictors of hypervigilance to pain.

Characteristics

Chapman (1978) was one of the first to apply the construct of (hyper)vigilance to somatic sensations and pain. He referred to hypervigilance as a perceptual habit of scanning the body for somatic sensations. Hypervigilance was thought to be an emergent property of the threat value of pain. People who appraise bodily sensation as dangerous were thought to be more likely to develop a habit of scanning the body for threatening sensations. His view is similar to the view expressed by Watson and Pennebaker (1989), who explored diverse explanations for the robust relationship between negative affectivity and somatic complaints. Indeed, an impressive number of studies has revealed that NA is strongly associated with symptom reporting and a heightened self-report of all types of physical sensations and symptoms, even in the absence of medical markers of disease. Watson and Pennebaker argued that this relationship is best explained by a hypervigilance to somatic information in persons with high levels of NA: “First, [individuals with] high NA may be more likely to notice and attend to normal body sensations and minor aches and pains. Second, because their scanning is fraught with anxiety and uncertainty, [individuals with] high NAs may interpret normal symptoms as painful or pathological” (Watson and Pennebaker 1989, p 247). Hypervigilance has become a key theoretical and clinical construct in explaining high symptom reporting, especially in situations of medically unexplained or ambiguous sensations (Barsky and Klerman 1983; Rollman and Lautenbacher 1993). We should, however, be careful in equating high symptom reporting with hypervigilance. Hypervigilance is only one possible explanation for high symptom reporting, and other explanations using central nervous processes are often not taken into account. It is also presumptuous to conclude that a low pain threshold and a low pain tolerance are sensitive and specific indicators of hypervigilance. Hypervigilance may only be invoked as an explanatory construct when attentional processes are involved. Hypervigilance may be assessed by using self-report, psychophysiological and behavioural measures (Van Damme et al. in press b). In understanding hypervigilance, it is important to consider “normal” attention to pain. Eccleston and Crombez (1999) were among the first to systematically investigate the
“normal” attentional processes to pain. In their cognitive-affective model of the interruptive function of pain, they argued that pain imposes an overriding priority for attentional engagement by activating a primitive defensive system that urges escape from somatic threat. Whether pain will demand attention, is the result of both pain-related characteristics (i.e. intensity, novelty, catastrophizing about pain, pain-related fear) and characteristics of other demands in the environment (monotonous environment, attention absorption in other activities). In their model, it is difficult to draw a sharp delineation between vigilance and hypervigilance. Hypervigilance to pain does not seem to result from an abnormal characteristic of the individual, such as negative affectivity. Available evidence suggests that hypervigilance to pain emerges as the working of normal attentional mechanisms in abnormal situations. Such situations are: (1) the chronic presence of high-intensity pain, (2) monotonous environments, or environments that lack external stimulation, and (3) most importantly, the high threat value of pain. Indeed, Goubert et al. (in press) found that the key mediating variable in explaining hypervigilance to pain was not an abnormally high level of negative affectivity, but the immediate threat value of pain, measured by pain-related fear and catastrophic thinking about pain (Fig. 1). Negative affectivity was best conceived as a vulnerability factor: It lowers the threshold at which pain is perceived as threatening, and at which catastrophic thoughts about pain emerge.

Figure 1
Psychology of Pain, hypervigilance and attention to pain.

The idea that one is hypervigilant for threatening information is well-known in the clinical literature on fear and anxiety (Eysenck 1992; Pincus and Morley 2001). In contrast with the view of Chapman (1978), hypervigilance to threat is not restricted to one particular attentional mechanism, i.e. scanning. It is therefore reasonable to assume that hypervigilance to pain and somatic sensations may also become manifest in a variety of ways. The following example may clarify these different components: Imagine a person, afraid of back pain and (re)injury during movements, who has to resume a backstraining job after a period of pain-related work absence. The thought of going back to work will be sufficient to make him fearful. This thought may make him distracted by several irrelevant stimuli in the environment (distractibility). From the moment he starts with some backstraining activities at work, he may begin to scan his body for pain or for other potential signals of bodily harm (scanning). This may result in the rapid detection of any bodily sensation in his back. Attention will be drawn automatically to any change in back sensations (attentional bias), and once it is detected, the person may experience difficulties disengaging attention from these somatic sensations and to re-engage attention towards his work (difficulty disengaging attention).

There are a number of promising paradigms that allow these various components of hypervigilance to pain to be disentangled (Van Damme et al. 2002; Spence et al. 2002). Studies have begun to investigate the critical role of these components in hypervigilance to pain. Results suggest that the rapid detection of pain or signals of pain is not critically dependent upon the presence of pain (attentional bias). The introduction of any somatosensory stimulus – painful or non-painful – introduces a rapid shift of attention towards that stimulus. Of more importance seems to be the effect of threat upon the difficulty disengaging from pain. Once pain or signals for pain have been detected, there is a difficulty disengaging from that threatening information. The difficulty is even more pronounced for those who catastrophize about pain (Van Damme et al. in press a). Our understanding of hypervigilance has a number of implications. First, hypervigilance may be one mechanism by which pain-related fear may fuel avoidance. Patients with kinesiophobia are also hypervigilant for pain and possible signals of impending pain. Their attention dwells more on somatic sensations and will easily promote avoidance behaviour (Vlaeyen and Linton 2000). Second, hypervigilance to pain and somatic sensations will result in the more frequent reporting of symptoms. Third, as research shows that a high threat value of pain results in difficulty disengaging from pain and pain signals, cognitive interference will occur. Fourth, as
hypervigilance seems to be mediated by the threat value of pain, distraction is probably not an effective treatment technique in patients with a high level of catastrophic thinking about pain. This was confirmed in the study by Hadjistavropoulos et al. (2000), who found that distraction was not effective in chronic pain patients with a high level of health anxiety.

References


