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Anxiety sensitivity, conscious awareness and selective attentional biases in children

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Abstract

The current study investigated whether physical anxiety sensitivity (AS) is associated with selective attentional biases to affective stimuli in children. The dot-probe paradigm was used to examine the deployment of attention towards words pertaining to anxiety symptomatology, socially threatening words, and positive words, in samples of 8–10-year-old children. Word pairs were presented under both masked and unmasked conditions. Irrespective of masking, children high in physical AS displayed an attentional vigilance for emotional words relative to neutral words, whereas those low in physical AS displayed a relative avoidance of such material. The results of this study are interesting as they not only suggest the presence of automatic AS-related biases in childhood, but that this is a general emotionality bias rather than one related to specific anxiety-related stimuli.

Keywords: Anxiety sensitivity; Selective attention; Dot-probe paradigm; Children

Introduction

Anxiety sensitivity (AS) is the fear of anxiety-related sensations such as palpitations, trembling, and dizziness, which arises from the belief that such sensations have aversive consequences. According to Reiss' expectancy theory, AS also plays a role in the pathogenesis of fear, anxiety, and panic (Reiss, 1991; Reiss & McNally, 1985), with support coming from psychometric studies, panic provocation tasks, and prospective investigations (e.g., Asmundson, Norton, Wilson, & Sandler, 1994; Schmidt, Lerew, & Jackson, 1997; Schmidt, Lerew, & Joiner, 1998, 2000; Sturges, Goetsch, Ridley, & Whittal, 1998).

Although the subject of considerable attention in adults, there is emerging research to suggest that AS may also be important in both children and adolescents. Not only have individual differences in adult AS been found to be partly attributable to differences in childhood experiences, but also levels of AS are higher in children meeting diagnostic criteria for panic disorder (PD) than those with other anxiety disorders (e.g., Kearney, Albano, Eisen, Allan, & Barlow, 1997; Lau, Calamari, & Waraczynski, 1996; Scher & Stein, 2003).

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Furthermore, childhood AS predicts anxiety experienced in response to behavioural challenge tasks as well as the onset of panic attacks (Hayward, Killen, Kraemer, & Taylor, 2000; Rabian, Embry, & MacIntyre, 1999; Weems, Hayward, Killen, & Taylor, 2002; Wilson & Hayward, 2005). Although there are inconsistencies in findings with clinical anxiety, in non-clinical groups, parental AS may also be related to children's AS levels (Mannuzza et al., 2002; Tsao et al., 2005; van Beek, Perna, Schruers, Muris, & Griez, 2005). Finally, recent factor-analytic investigations of the Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986) and the Childhood Anxiety Sensitivity Index (CASI; Silverman, Fleisig, Rabian, & Peterson, 1991) are similar in that both have found AS to be best represented by a hierarchical factor structure with two, three or four lower-order factors (pertaining to physical, social, and mental incapacitation concerns) loading on to a single higher-order general AS factor (Cox, Parker, & Swinson, 1996; Dehon, Weems, Stickle, Costa, & Berman, 2005; Muris, 2002; Silverman, Ginsburg, & Goedhart, 1999; Silverman, Goedhart, Barrett, & Turner, 2003; Stewart, Taylor, & Baker, 1997; Walsh, Stewart, McLaughlin, & Comeau, 2004; Zinbarg, Brown, & Barlow, 1997). Furthermore, adult studies suggest that the strongest and most consistent lower-order factor relates to physical concerns (Keogh, 2004).

Given the similarity between AS in adults and children, it is possible that similar mechanisms underpin both. Within adults, research has focused on isolating the cognitive mechanisms that may be important in AS, especially those relating to awareness or hypervigilance for bodily sensations. Objective measures of attentional bias, such as the emotional Stroop and the dot-probe paradigms have been generally used to examine emotion-related attentional biases (Williams, Watts, MacLeod, & Mathews, 1997). These tasks reveal that both non-clinical high trait-anxious individuals and clinically anxious patients exhibit automatic (hyper)vigilance for stimuli pertaining to their current concerns (e.g., McNally, Kaspi, Riemann, & Zeitlin, 1990; Mogg, Bradley, & Williams, 1995; Mogg & Marden, 1990; Mogg, Mathews, Bird, & Macgregor-Morris, 1990). Research investigations that have applied such tasks to adults high in AS suggest that similar selective attentional biases exist (Hunt, Keogh, & French, in press; Keogh, Dillon, Georgiou, & Hunt, 2001; Koven, Heller, Banich, & Miller, 2003; Stewart, Conrod, Gignac, & Pihl, 1998). In addition, such biases may be dependent on the component of AS under investigation. For example, Keogh et al. (2001) found that individuals high in physical AS showed a specific vigilance for physical threat-related words, whereas individuals with low physical AS showed avoidance of these words. More recently, Hunt et al. (in press) not only partly replicated this effect, but also found that such specific physical AS-related vigilance may occur below the threshold of conscious identification; this suggests that biases may reflect automatic rather than strategic processes.

Unfortunately, while such AS-related attentional biases have been found in adults, there has been relatively little investigation of such effects in children. Instead, most of the research conducted on attentional biases in children has either used subjective measures of vigilance or focused on anxiety-related biases without consideration of the AS construct (Daleiden & Vasey, 1997). For example, subjective studies into heart rate awareness suggest that children high in AS may be particularly vigilant for such cues (Eley, Stirling, Ehlers, Gregory, & Clark, 2004). Of the studies that use more objective attentional tasks it seems that anxious children may indeed be characterised by attentional biases similar to those found in adults (e.g., Dalgleish, Moradi, Taghavi, Neshat-Doost, & Yule, 2001; Martin, Horder, & Jones, 1992; Moradi, Taghavi, Neshat-Doost, Yule, & Dalgleish, 1999; Schippell, Vasey, Cravens-Brown, & Bretveld, 2003; Taghavi, Neshat-Doost, Moradi, Yule, & Dalgleish, 1999; Vasey, Daleiden, Williams, & Brown, 1995; Vasey, El-Hag, & Daleiden, 1996). There are, however, inconsistencies in the pattern of results found in such child studies. For example, two studies with children aged 8–12 have failed to find a fear-specific Stroop interference effect, in that threat biases were found in both high- and low-fear groups (Kindt, Bierman, & Brosschot, 1997; Kindt, Brosschot, & Everaerd, 1997). Also when Waters, Lipp, and Spence (2004) presented threat-related, positive and neutral pictures in a dot-probe study, they found that both clinically anxious and non-anxious control children showed a threat bias. There was also a suggestion that the clinically anxious children show a bias towards positive stimuli as well.

Some of these inconsistencies may be due to methodological differences between studies. For example, stimulus type may be important in that differences in results are found when using words compared to pictures (Kindt & Brosschot, 1999; Kindt, van den Hout, de Jong, & Hoekzema, 2000). There has also been a failure to included positive stimuli, which allow for the examination of a general emotional bias as opposed to a specific