Journal of Affective Disorders 192 (2016) 1–7

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

Investigation of the cognitive variables associated with worry in children with Generalised Anxiety Disorder and their parents

Caroline L. Donovan [a,*], Monique C. Holmes [a], Lara J. Farrell [b]

[a] School of Applied Psychology and the Menzies Health Institute Queensland, Griffith University, Mount Gravatt Campus, Mount Gravatt 4122, QLD, Australia
[b] School of Applied Psychology and the Menzies Health Institute Queensland, Griffith University, Gold Coast Campus, Southport 4222, QLD, Australia

ARTICLE INFO

Article history:
Received 17 July 2015
Received in revised form
30 November 2015
Accepted 7 December 2015
Available online 10 December 2015

Keywords:
Generalised anxiety disorder
Child anxiety
Parent
Cognition

ABSTRACT

Background: Intolerance of uncertainty (IU), negative beliefs about worry (NBW), positive beliefs about worry (PBW), negative problem orientation (NPO) and cognitive avoidance (CA) have been found to be integral in the conceptualisation of Generalised Anxiety Disorder (GAD) in adults, yet they have rarely been investigated in children with GAD. This study sought to determine (a) whether IU, NBW, PBW, NPO and CA differ between children diagnosed with GAD and non-anxious children and (b) to examine whether IU, NBW, PBW, NPO and CA differ between parents of children diagnosed with GAD and parents of children without an anxiety disorder.

Methods: Participants were 50 children (aged 7–12 years), plus one of their parents. The 25 GAD children and 25 non-anxious children were matched on age and gender. Parents and children completed clinical diagnostic interviews, as well as a battery of questionnaires measuring worry, IU, NBW, PBW, NPO and CA.

Results: Children with GAD endorsed significantly higher levels of worry, IU, NBW, NPO and CA, but not PBW compared to non-anxious children. Parents of children with GAD did not differ from parents of non-anxious children on any of the variables.

Limitations: The study was limited by it's use of modified adult measures for some variables and a lack of heterogeneity in the sample.

Conclusions: The cognitive variables of IU, NBW, NPO and CA may also be important in the conceptualisation and treatment of GAD in children as they are in adults.

1. Introduction

Although research on generalised anxiety disorder (GAD) in adults has steadily increased over the last 15 years, our knowledge, understanding and treatment of this disorder in children remains a relatively neglected area of empirical enquiry. GAD is a very cognitive disorder, characterised by excessive and uncontrollable worry about numerous topics, that occurs more days than not for a period of at least six months (APA, 2013). The typical age of onset of GAD appears to be between 8 and 10 years of age (Last et al., 1992; Masi et al., 1999), and has been associated with a myriad of problematic consequences for children including difficulty concentrating at school, disrupted sleeping patterns, nervous habits (such as nail biting or skin picking), academic difficulties, and school refusal/social withdrawal due to decreased self-confidence and ostracism from peers (Albano and Hack, 2004).

Given the dearth of research conducted with children in this area, much of what is currently known about childhood GAD is derived from empirical studies conducted with adults. Within the adult literature, research has demonstrated that cognitive factors such as intolerance of uncertainty (IU), positive and negative beliefs about worry (PBW and NBW), negative problem orientation (NPO) and cognitive avoidance (CA) are particularly important in the development and maintenance of pathological worry and GAD (Dugas and Robichaud, 2007). *Intolerance of Uncertainty (IU)* is a dispositional characteristic that originates from a set of negative beliefs about uncertainty and its consequences (Dugas and Robichaud, 2007). Individuals high in IU find ambiguity stressful and upsetting that consequently, impacts on their ability to adapt and effectively cope in situations that are uncertain. *Problem orientation* is a motivational process and refers to the behavioural, cognitive and emotional variables that characterise an individual's knowledge and appraisal of their beliefs about, and expectancies relating to, the occurrence of problems and his/her ability to solve them (D'Zurilla and Nezu., 1999). A *negative problem orientation (NPO)* produces negative outcomes and avoidance tendencies that

* Corresponding author.
E-mail addresses: c.donovan@griffith.edu.au (C.L. Donovan), m.holmes@griffith.edu.au (M.C. Holmes), l.farrell@griffith.edu.au (L.J. Farrell).

http://dx.doi.org/10.1016/j.jad.2015.12.003
0165-0327/

inhibit adaptive problem-solving (D'Zurilla and Nezu., 1999). Individuals with a NPO tend to view problems as threatening and unsolvable, and usually become frustrated and upset when problems arise. Individuals who excessively worry may also hold a number of *positive* and/or *negative beliefs about worry* (PBW and NBW). *NBW* centre around the mental and physical impact of uncontrollable worry (Wells, 1997). Individuals who hold NBW generally believe that their worries are uncontrollable, harmful and could lead to insanity. On the other hand, *PBW* centre around the utility of worry as a coping strategy (Wells, 1997). Individuals who hold these beliefs generally believe that worrying helps them to cope; helps them to prevent bad things from happening; and enables them to be prepared for whatever comes their way (Wells, 1997). Finally, *cognitive avoidance* (CA) refers to those strategies (whether automatic or purposeful) that lead to the avoidance and/or suppression of unwanted mental content.

Overall, investigations with anxious and non-anxious samples of adults have found that IU, NPO, PBW, NBW and CA are related to an individual's tendency to worry (e.g., Borkovec and Roemer, 1995; Buhr and Dugas, 2006; Dugas et al., 1997; Freeston et al., 1994; Koerner and Dugas, 2008; Robichaud et al., 2003; Wells and Papageorgiou, 1998) and that IU, NPO, NBW and CA effectively discriminate between adults with GAD and non-anxious adults (Dugas et al., 2005; Ladouceur et al., 1998, 1999; Wells and Carter, 2001). There is also some evidence of specificity with respect to IU and NBW, such that adults with GAD have been found to report significantly higher levels of IU and NBW than individuals with social phobia (SoPh), panic disorder (PD), post-traumatic stress disorder (PTSD), and depression (Dugas et al., 2005; Ladouceur et al., 1998, 1999; Robichaud et al., 2003; Wells and Carter, 1999).

Researchers have only just begun to assess the cognitive constructs of IU, PBW, NBW, NPO and CA in children and adolescents. There is preliminary yet accumulating evidence that non-clinical children and adolescents who have a tendency to excessively worry, also have difficulty tolerating uncertainty, have a negative problem orientation, attempt to avoid threatening cognitive stimuli and hold negative beliefs about worry (Barahmand, 2008; Fialko et al., 2012; Fisak et al., 2013; Laugesen et al., 2003; Payne et al., 2011). Unlike what has been found in the adult and adolescent literature however, it would seem from the very limited empirical evidence to date, that positive beliefs about worry are less related to worry in children (Bacow et al., 2009, 2010; Dugas and Robichaud, 2007; Fialko et al., 2012). In addition, it has recently been found that NBW and CA (and not IU), are the strongest, unique predictors of worry in children (Buhr and Dugas, 2006; Dugas et al., 1997). The findings presented above provide some evidence that the cognitive variables known to be associated with worry in adults (with the possible exception of PBW), may also be associated with worry in children.

The studies described above have been conducted with non-clinical children. Only four studies to date have examined whether clinically anxious children endorse the cognitive variables of IU, NBW, PBW, NPO and CA to a greater extent than non-anxious children. While Bacow et al. (2009, 2010) found no evidence that clinically anxious children report higher levels of PBW or NBW than non-anxious children, Smith and Hudson (2013) found that clinically anxious children report significantly higher levels of PBW and NBW compared to non-anxious children. Investigating IU, Comer et al. (2009) found that age had a significant effect, such that IU was able to discriminate between anxious and community children aged between 9 and 15 years, but not between anxious and community children aged 7–8 years, or 16–17 years.

It is evident from the four studies conducted to date examining cognitive variables associated with worry in children, that the results are inconsistent. This may in part be due to the fact that three of the studies included samples of children who held a variety of anxiety disorders, rather than those with a primary diagnosis of GAD specifically. Furthermore, despite the fact that each study included a non-anxious control condition, none of the studies matched the clinical children to the non-clinical children on important demographic characteristics such as age and gender. Indeed, in some studies, the non-anxious children were outnumbered by the anxious children and the studies were consequently under-powered. Finally, only NBW, PBW and IU have been investigated to date, with NPO and CA being neglected in the studies conducted thus far. The first aim of the study reported here therefore, was to compare children with a primary diagnosis of GAD with a *matched* group of non-anxious children on IU, PBW, NBW, NPO and CA.

The second aim of this study involved parents. Given that anxious children tend to have anxious parents (Beidel and Turner, 1997; Craske, 1997; Muris, 2007; Turner et al., 1987) due to both genetic and environmental influences, it was of interest to this study to examine whether parents of children with GAD would endorse worry, IU, PBW, NBW, NPO and CA to a greater extent than parents of non-anxious children. A recent study by our group has found preliminary evidence that this might well be the case in a community sample (Donovan et al., In preparation). In this study, parental worry was found to be significantly related to child worry, IU, NBW, NPO and CA, and the relationship between parent worry and child worry was found to be mediated by child NBW and CA. Furthermore, the relationships between parental IU, NPO and CA and child worry were found to be mediated by child IU, NPO and CA respectively such that: higher parental IU was associated with higher child IU, which in turn was associated with greater child worry; higher parental NPO was associated with higher child NPO, which in turn was associated with greater child worry; and higher parental CA was associated with higher child CA, which in turn was associated with greater child worry. The results point to transmission of specific cognitive processes from parent to offspring that may lead to an increased vulnerability for worry.

Given the discussion above, it was hypothesised that compared with non-anxious children, children with GAD would report greater worry, IU, NBW, NPO and CA. It was also hypothesised that compared to parents of non-anxious children, parents of children diagnosed with GAD would report greater worry, IU, NBW, NPO and CA. Given the mixed findings in the adult and child literature regarding PBW, differences between anxious and non-anxious groups on this variable were investigated in an exploratory manner for both parents and children.

2. Method

2.1. Participants

Participants were 50 children (20 males, 30 females) aged between 7 and 12 years ($M=9.92$, $SD=1.52$), plus one of their parents (50 mothers). Of the children, 25 met Diagnostic and Statistical Manual for Mental Disorders – Fourth Edition (DSM-IV-TR; APA, 2000) criteria for a primary diagnosis of GAD according to a semi-structured interview (see below) and 25 were non-anxious (as determined by the same interview), with anxious and non-anxious children being matched on age and gender. Eighty-six per cent of children were born in Australia, with the remainder born in New Zealand, South Africa, the United Kingdom and Japan. As assessed by combined household income, the majority of children (66%) came from middle- to high-income Australian families. Table 1 presents the sociodemographic information for the clinical participants, non-clinical participants, and the sample as a whole.