

Challenging Parenting Behaviour and Childhood Anxiety Disorders:

A Role for Fathers?



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Thesis Summary

The relationship between certain parenting behaviours and offspring anxiety has been the subject of extensive research. Whilst often described as *parenting* behaviours, the majority of research has focussed on mothers, ignoring the role of fathers. This thesis addresses this gap, exploring the relationship between father's behaviours and childhood anxiety disorders via a novel parenting construct, termed 'Challenging Parenting Behaviour' (CPB). Paper 1 examined the relationship between recalled CPB and current adult anxiety. An exploratory factor analysis identified three latent constructs underlying adults' recall of CPB; Social and Novelty CPB were associated with lower reported adult anxiety, and fathers' Teasing CPB was related to increased adult anxiety. Extending upon these findings, Papers 2 and 3 examined the concurrent associations between CPB and childhood anxiety, whilst also considering the role of parental anxiety. Paper 2 identified that fathers reported to engage in more CPB than mothers, yet only mothers CPB was able to predict child anxiety diagnosis. Importantly, CPB from both caregivers was associated with reduced anxiety symptoms. Paper 3 developed a novel measure for assessing CPB, testing this measure on a sample of fathers. This study also examined the effect of fathers' CPB on child risk-taking, and the relationship between fathers' CPB and child behavioural inhibition (BI). Children took more risks when playing with their father than when alone. No evidence was found for a relationship between fathers' CPB and BI, nor between CPB and anxiety, except for a partial relationship between a subdomain of CPB; rough-and-tumble play, and child anxiety diagnosis. Neither paper displayed evidence for a relationship between parent anxiety and CPB. Finally, Paper 4 evaluated the measurement invariance of a measure of CPB across Dutch and Australian mothers and fathers of preschool-aged children. The Australian sample of this study was drawn from Papers 2 and 3. There was evidence of partial scalar invariance, indicating that the groups differed on some subscales of the questionnaire. Importantly, CPB

from mothers and fathers predicted fewer anxiety symptoms and anxiety disorders for all groups. Taken together, the results of this thesis present unique information about fathers' (and mothers') CPB and its relation to offspring anxiety, suggesting that CPB may be associated with lower report of child anxiety.

Statement of Candidature

I certify that the work of this thesis entitled “The Relationship between Challenging Parenting Behaviour and Childhood Anxiety Disorders: A Role for Fathers?” has not been previously submitted for a degree to any other university or institution.

I certify that the thesis is an original piece of research that has been written by me, with support from Drs. Jennifer Hudson, Lauren McLellan, and Helen Dodd. The individual contributions of co-authors and contributors have been appropriately acknowledged. In addition, I certify that all information sources and literature used when preparing this thesis have been referenced appropriately.

Macquarie University Ethics Committee approval was obtained for all aspects of the research studies presented in this thesis, references 5201000902, 5201100488, 5201600092, 5201300815, and 5201600091 (see Appendix iii).

Rebecca Lazarus



Date

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Summary of Contributions to Empirical Papers

Contribution	Chapter 2	Chapter 3	Chapter 4	Chapter 5
Study Conception	RL, JH	RL, JH, HD	RL, JH, PR	JH, HD, RL, MM, SB
Data Collection	RL, JH	JH, HD, TM, YB, RL	RL, JH, HD, TM, YB	RL, JH, HD, TM, MM, CS, WD, SB,
Data Analysis	RL, JH, LM	RL, JH, HD, MM, WD, SB	RL, JH	MM, RL, FO
Interpretation of Results	RL, JH, LM	RL, JH, HD, MM, WD, SB	RL, JH, HD, TM	MM, RL, FO, JH, WD
Paper Preparation	RL	RL	RL	RL, MM
Paper Revisions	RL, JH, LM	RL, JH, HD, MM, WD, SB, TM, YB	RL, JH, HD, TM, YB, PR	MM, RL, JH, HD, FO, SB, CS, TM, WD, YB

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Chapter 1.
General Introduction

Introduction

Research investigating the relationship between parenting factors and childhood anxiety disorders has typically focussed on the role of mothers, ignoring the role of fathers. The overarching aim of this thesis is to address this gap, exploring the relationship between fathers' parenting behaviours and anxiety disorders in their children. Specifically, this thesis will investigate a newly defined parenting domain 'challenging parenting behaviour' and will examine this concept, using innovative methods, in clinical and non-clinical samples.

The purpose of this chapter is to provide a theoretical and empirical rationale for this body of work. First, it will begin with a definition of childhood anxiety disorders and an overview of the prevalence of these disorders. Next, a summary will be provided of risk and maintaining factors involved in the aetiology of childhood anxiety disorders, with a focus on the role of certain parenting behaviours (control, rejection, and modelling) and parental anxiety. Then, shifting focus to what is known about the role of *fathers* in the development of childhood anxiety disorders, a review of the empirical literature that has specifically examined the traditional parenting behaviours of control, rejection and modelling is provided. The results of this review are considered in light of the theoretical models proposing the role of fathers' parenting in the aetiology of child anxiety, and, the concept of challenging parenting behaviour is introduced. A review of the extant empirical literature involving challenging parenting behaviour is provided. Finally, this chapter will present the aims and structure of this thesis.

Anxiety Disorders

Anxiety disorders in the diagnostic and statistical manual of mental disorders.

Anxiety may be considered "a future-oriented mood state in which one is ready or prepared to attempt to cope with upcoming negative events" (Barlow, 2002, p. 64). Whilst anxiety is a common human experience, anxiety can be considered disordered when these feelings are

beyond normative developmental suitability, and interfere with psychosocial development or daily functioning (American Psychiatric Association, 2013). The essential features of anxiety disorders are “excessive and enduring fear, anxiety or avoidance of perceived threats, and can also induce panic attacks” (Craske et al., 2017, p. 1) Differentiating “normal” childhood fears from pathological phobias and anxiety is facilitated by diagnostic systems such as the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013)*. The DSM-5 distinguishes amongst eleven different types of anxiety disorders (separation anxiety, selective mutism, specific phobia, social anxiety, panic disorder, agoraphobia, generalised anxiety, substance/medication-induced anxiety disorder, anxiety disorder due to another medical condition, other specified anxiety disorder, and unspecified anxiety disorder), which differ from one another in the types of objects or situations that are feared or avoided as well as the content of the associated thoughts or beliefs surrounding that fear (DSM-5, American Psychiatric Association, 2013).

It is important to note that the majority of studies presented in this thesis were conducted using the diagnostic criteria from the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; 2000). Changes that are of note for this thesis include that in the DSM-IV-TR, Obsessive Compulsive Disorder (OCD; characterised by “obsessions (which cause marked anxiety or distress) and/or by compulsions (which serve to neutralize anxiety)” (DSM-IV-TR, American Psychiatric Association, 2000, p. 429) and Post Traumatic Stress Disorder (PTSD; characterised by “the re-experiencing of an extremely traumatic event accompanied by symptoms of increased arousal and by avoidance of stimuli associated with the trauma” (DSM-IV-TR, American Psychiatric Association, 2000, p. 429)) were considered anxiety disorders, whereas in the DSM-5 these disorders have been moved to their own respective chapters. However, the conceptual proximity of these disorders continues to be recognized in that “the sequential order of these chapters reflects the close

relationships among them” (APA, Highlights of Changes from DSM-IV to DSM 5, p.5). Further, in DSM-5 selective mutism, defined as a “consistent failure to speak in social situations in which there is an expectation to speak” (American Psychiatric Association, 2013, p. 189), is now classified as an anxiety disorder, “given that a large majority of children with selective mutism are anxious” (APA, Highlights of Changes from DSM-IV to DSM 5, p.7). As data collection for Chapters 3, 4, and 5 of this thesis began prior to the release of DSM-5, the measures used to assess anxiety were based on DSM-IV criteria. In an attempt to maintain consistency throughout this thesis, we continue to include OCD and PTSD as anxiety disorders. However, rather than partitioning anxiety into specific disorders indicated by the DSM-IV and DSM-5, this thesis refers to childhood anxiety disorders broadly, a relatively common practice in the literature (e.g. Bayer, Sanson, & Hemphill, 2006).

Prevalence and comorbidity of childhood anxiety disorders. There is strong evidence to suggest that anxiety disorders are amongst the most common mental health problems for children and adolescents (Beesdo, Knappe, & Pine, 2009; Cartwright-Hatton, McNicol, & Doubleday, 2006; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Prevalence rates for childhood anxiety disorders vary across studies, reflecting methodological difficulties with respect to their estimation (Spence, Rapee, McDonald, & Ingram, 2001). Current lifetime prevalence estimates for ‘any’ anxiety disorder in studies involving children and adolescents are at approximately 15 to 20% (Beesdo et al., 2009). In Australia, a recent national survey provided prevalence estimates for children and adolescents who met DSM-IV diagnostic criteria for social phobia, separation anxiety, generalized anxiety, and obsessive-compulsive disorder (Lawrence et al., 2015). This survey revealed that half of all children and adolescents aged 4-17 years with mental disorders had an anxiety disorder, equivalent to 6.9% of all children and adolescents. In addition to their high lifetime

prevalence, anxiety disorders impact multiple spheres of life and, for children, anxiety is commonly related to negative impacts on peer relationships, self-esteem, and attention and concentration (Lyneham & Rapee, 2007). If left untreated, anxiety is known to persist into adulthood and has displayed adverse outcomes in social, academic, and occupational domains (Balazs et al., 2013; Essau, Olaya, & Ollendick, 2013).

There is considerable comorbidity amongst anxiety disorders in childhood and adolescence (Essau & Gabbidon, 2013; Rapee, Schniering, & Hudson, 2009). For example, Rapee (2012) found that within clinical populations of children and adolescents, up to 75% of youth meet criteria for two or more anxiety disorders simultaneously. Further, childhood anxiety disorders have been shown to display comorbidity with other disorders including depression, conduct disorder, attention deficit hyperactivity disorder, as well as learning difficulties (Beesdo et al., 2009; Jarrett & Ollendick, 2008; Last, Hersen, Kazdin, Orvaschel, & Perrin, 1991). Beesdo et al. (2009) note that secondary depression appears to be a particularly frequent and concerning outcome of anxiety disorders. Given the frequency, comorbidity, and detrimental effects of anxiety on developmental, psychosocial, and psychopathological domains, inquiry into potential contributory factors involved in anxiety development and maintenance are worthy of continued empirical investigation (Rapee, 1997; Stein & Kean, 2000). Such research will facilitate the development of targeted early intervention programs, prevention, and treatment strategies (Beesdo et al., 2009; Hudson & Dodd, 2012; Pella, Drake, Tein, & Ginsburg, 2017).

The Development of Childhood Anxiety Disorders

Considering the aforementioned chronicity and impairment associated with childhood anxiety disorders, the examination of contributory and maintaining factors are at the forefront. The intergenerational transmission of risk for anxiety may reflect genetic, biological and familial environment factors. Numerous additional factors have been

implicated in the development of childhood anxiety disorders (e.g. attachment style, cognitive biases, quality of the mother-father relationship), however this thesis focuses specifically on parenting behaviours (i.e. the direct behaviour of a parent towards the target child) involved in the transmission of anxiety, and the impact of parental anxiety towards these parenting behaviours. Given child temperament can have a significant impact on parenting behaviours and the clear link between inhibited temperament and later anxiety disorders, this thesis also considers the relationship between parenting behaviours and a behaviourally inhibited temperament style.

Biological risk factors, heritability and temperament. It has been frequently noted that children of parents with an anxiety disorder are more likely to have an anxiety disorder than children of parents without an anxiety disorder, with some studies noting that these children have a twofold to fourfold increased risk for anxiety disorders (Craske et al., 2017; Merikangas, Prusoff, & Weissman, 1988). Similarly, parents of children with an anxiety disorder are more likely to have an anxiety disorder themselves (Beesdo et al., 2009; Connell & Goodman, 2002; Dougherty et al., 2013). Thus, anxiety disorders commonly run in families. Evidence from twin and adoption studies purports that there is moderate heritability of anxiety disorders in childhood and adolescence, with estimates that genetics account for approximately 30% to 40% of the variance in anxiety symptoms and disorders (Zavos, Eley, & Gregory, 2013; Zavos, Gregory, & Eley, 2012). Whilst estimating precise heritability is a difficult task due to the many forms of anxiety and various population variables (Gregory & Eley, 2011), there is nevertheless considerable evidence supporting the role of genetics in the expression of anxiety disorders at both the symptom and disorder specificity level.

Another biological factor that has been extensively empirically linked as a predisposing factor for anxiety disorders is the temperament style of Behavioural Inhibition (BI) (Pahl, Barrett, & Gullo, 2012; Rapee et al., 2009). The term BI refers to a temperamental

disposition with characteristics including extreme reticence, uncertainty, and increased physiological arousal when confronted with novel people, objects, or situations (Kagan, 1989; Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984). Approximately 15% of children have been found to display BI (Fox, Henderson, Marshall, Nichols, & Ghera, 2005), and empirical research has consistently associated BI children to be at greater risk for developing anxiety disorders later in life, particularly social anxiety disorder (Chronis-Tuscano et al., 2009). In a 5-year follow-up study of 4-year-old children by Hudson and Dodd (2012), 54% of BI children displayed an anxiety disorder at 5-year follow-up, and, 37% of these BI children were diagnosed with social anxiety disorder, reiterating that BI is a strong predictor of anxiety over time and that BI children are at an increased risk of developing anxiety disorders, especially social anxiety (Hudson & Dodd, 2012). Whilst research demonstrates that BI children are more likely to develop anxiety disorders than Behaviourally Uninhibited (BUI) children (Shamir-Essakow, Ungerer, & Rapee, 2005), it is important to note that not all BI children develop an anxiety disorder (Hudson, Dodd, & Bovopoulos, 2011; White et al., 2017). Moreover, BUI children are also susceptible to the development of anxiety disorders (Hudson et al., 2011).

To summarise, genetic heritability accounts for a moderate proportion of the familial aggregation in anxiety disorders, and, identifies BI as a strong risk factor for the development of later anxiety disorders. At the same time, genetic research consistently points to a strong environmental component in the aetiology of childhood anxiety disorders (Gregory & Eley, 2007). For example, a recent children-of-twins study obtained results supporting the direct environmental transmission of anxiety from parents to children, after accounting for genetic confounding (Eley et al., 2015). Therefore, it is important to consider the interaction of inherited risk factors with environmental factors that determine the degree of anxiety expression (Brown & Whiteside, 2008; Gregory & Eley, 2007; Spence & Rapee, 2016). As

an example of this kind of work, there are a number of studies that have shown a combination of BI and parenting behaviours to be related to anxiety symptoms and child shyness (Lewis-Morrarty et al., 2012; Spence & Rapee, 2016).

The Role of Parenting in the development of Childhood Anxiety

Parenting behaviours. Of the environmental variables implicated in the aetiology of anxiety disorders, the role of certain parenting behaviours have received extensive empirical and theoretical attention. Specifically, two key parenting behaviours of control and rejection are known to be associated with the aetiology of anxiety disorders (Hudson & Rapee, 2001; Muris & Merckelbach, 1998; Ollendick & Hirshfeld-Becker, 2002; Rapee, 1997; Verhoeven, Bögels, & van der Bruggen, 2012). Parental control (used interchangeably with the terms ‘overprotection’ or ‘overcontrol’), in contrast to autonomy granting (parental encouragement of the child’s independent decision making and independence; see Silk, Morris, Kanaya, and Steinberg, 2003), occurs where parents provide greater assistance to their child than required to protect them from potential danger (Hudson et al., 2011), and has been consistently associated with elevated offspring anxiety levels (Affrunti & Ginsburg, 2012; Asbrand, Hudson, Schmitz, & Tuschen-Caffier, 2017; De Wilde & Rapee, 2008; Hudson & Rapee, 2001; McLeod, Wood, & Weisz, 2007; van Brakel, Muris, Bögels, & Thomassen, 2006). The exact mechanisms through which these parenting behaviours increase risk for child anxiety are not entirely understood, however, it is believed that parental control may increase the child’s perception of threat, as the child learns that the world is a dangerous place from which they need protection. Further, if parents are constantly stepping in to assist the child, this may lower the child’s ability to explore the environment and learn new skills, thereby possibly promoting anxiety in situations of novelty or perceived threat (Brook & Schmidt, 2008; Hudson & Rapee, 2001; Rapee, 1997). Thus, parental control has been implicated in the development of anxiety through its influence on children’s cognitions about threat and

control (Chorpita & Barlow, 1998; Creswell, Murray, Stacey, & Cooper, 2011; Hudson & Rapee, 2004).

Different from parental control, parental rejection is characterised by a lack of parental warmth, parental criticism or negativity, and low responsiveness to children's emotions and behaviours (McLeod et al., 2007). Parental rejection has also been associated with increased child anxiety symptoms (Brown & Whiteside, 2008; Grüner, Muris, & Merckelbach, 1999; Verhoeven et al., 2012). Parental rejection has been implicated in the development of childhood anxiety as this behaviour may convey to children that the environment is essentially hostile and threatening, contributing to a sense of low self-worth and competence (Bögels & Tarrier, 2004; Parker, 1983). However, there is less support for the relationship between parental rejection and childhood anxiety compared to parental control. For example, in a review of the literature, (Rapee, 1997) suggested that, despite evidence of some relationship, parental rejection is more strongly associated with childhood depression than anxiety.

In addition to the parenting behaviours of control and rejection, theoretical models suggest that parental modelling of anxious and/or avoidant behaviour (also termed vicarious learning and anxious rearing) is also of importance in the aetiology of anxiety (Fisak & Grills-Taquechel, 2007). Bandura's social learning theory has been used to support the idea that children may learn anxious or avoidant responses from their parents in a vicarious manner, by replicating their parents' actions (Bandura, 1986). Various studies have found support for the association between parental modelling of anxiety and child anxiety and worry (Grüner et al., 1999; Muris, Meesters, Merckelbach, & Hülßenbeck, 2000; Muris & Merckelbach, 1998; Muris, Steerneman, Merckelbach, & Meesters, 1996; Roelofs, Meesters, ter Huurne, Bamelis, & Muris, 2006). For example, in a sample of clinic-referred children (Muris et al., 1996) found evidence suggesting that maternal modelling of fearful behaviour

(measured via maternal self-report) explained a unique proportion of variance in children's fearfulness (measured via child self-report). Similar associations have been found in non-clinical samples where child-reported perceived anxious rearing of mothers and fathers has been positively associated with anxiety symptoms in children (Roelofs et al., 2006).

Whilst this relationship has been examined in both children and also via retrospective report from adults (e.g. Ehlers, 1993), it has also been examined in children during early infancy (Fisak & Grills-Taquechel, 2007), via social referencing (for a rationale see Muris et al., 1996). Social referencing refers to the communication process through which children acquire information from others, typically their parents and use this to appraise uncertain or novel situations (Feinman & Lewis, 1983). It is assumed that when children observe their parents reacting fearfully, through social referencing, children take on board this emotional information and then interpret the situation with fearfulness. There is growing empirical evidence that anxious signals communicated by parents lead to anxiety in children (Aktar, Majdandžić, de Vente, & Bögels, 2013, 2014; Fisak & Grills-Taquechel, 2007; Gerull & Rapee, 2002; Möller, Majdandžić, Vriends, & Bögels, 2014; Muris et al., 1996), and there is also evidence that children with an inhibited temperament may be particularly vulnerable to parental modelling of anxiety (see the review by Murray, Creswell, & Cooper, 2009).

Parental Anxiety and Parenting Behaviours

If parenting behaviours such as rejection and control, and the modelling of anxious or avoidant behaviours by the parent play a role in the intergenerational transmission of anxiety, then it may be reasonable to expect a greater frequency of these behaviours from parents who themselves experience anxiety (Creswell et al., 2011). For example, it is likely that children of anxious parents will have more opportunities to observe parental modelling of anxious behaviours, as they may experience more frequent encounters with the expression of anxiety. Whilst parenting behaviours have been found to play a discrete yet significant part in the

development of anxiety, Spence and Rapee (2016) state that less research has focused on parent psychopathology, which they suggest may be due in part to the difficulty in separating the genetic versus environmental contribution of parenting. Despite these difficulties, some research findings have corroborated this proposed relationship, with socially anxious mothers observed to exhibit more anxiety, engage less with a stranger, and display less encouragement towards their children's interaction with a stranger (Murray, Cooper, Creswell, Schofield, & Sack, 2007). Thus, if a biological parent is anxious themselves this may not only represent a greater genetic risk for the child, but may also result in a rearing environment that is conducive to the development of anxiety in young people, such as increased parental modelling of anxious behaviours, or the use of negative parenting behaviours such as rejection or control (Eley et al., 2015). With respect to the parenting behaviours rejection and control, some studies of these parenting behaviours in samples of anxious parents have found increased rejection or negativity and greater control or less autonomy granting (see Lindhout et al., 2006; Whaley, Pinto, & Sigman, 1999), whereas others have not found consistent associations (Ginsburg, Grover, & Ialongo, 2005; Turner, Beidel, Roberson-Nay, & Tervo, 2003). In addition, some studies have reported that mothers of anxious children may display more critical and controlling parenting behaviours, independent of their own anxiety status (e.g. Gar & Hudson, 2008), suggesting that these parenting behaviours may occur in response to child anxiety. Difficulty disentangling the effects of these identified risk and maintenance factors lies in the fact that, due to the family aggregation of anxiety (discussed earlier with respect to heritability), it remains possible that the associations between parental anxiety, parenting behaviours, and child anxiety are the result of shared environment (see Creswell et al., 2011). In summary, the direction of the relationship between parental anxiety and parenting behaviours is not yet clearly understood.

Nevertheless, children whose parents have a history of psychopathology experience higher rates of internalising problems than children of parents without a history of psychopathology (Connell & Goodman, 2002), and, children of individuals who have at least one anxiety disorder have a twofold to fourfold increased risk for anxiety disorders (Craske et al., 2017; Merikangas et al., 1988). Further, there is evidence that relations between parent psychopathology and child outcomes are not limited to mothers (Connell & Goodman, 2002); fathers of anxious children have an increased lifetime history of anxiety disorders when compared to fathers of non-anxious children (Cooper, Fearn, Willetts, Seabrook, & Parkinson, 2006). Last et al. (1991) found a significantly higher rate of anxiety disorders in fathers of anxious children, and, Messer and Beidel (1994) found significantly higher obsessive-compulsive symptomology scores in fathers of anxious children compared to fathers of control children. Thus, whilst less research has examined the direct pathway from parental anxiety towards offspring anxiety, namely due to the complexity disentangling the gene-environment interaction, the evidence suggests that parental mental health difficulties (from both caregivers) and parenting behaviours, are associated with child anxiety (Craske et al., 2017).

Important Considerations and Limitations

There are a number of important considerations with respect to this literature that need to be made. First, whilst some of the research reviewed above may have implied that the relationship between parenting towards child anxiety is unidirectional, or that parental anxiety may lead to increased negative parenting behaviours resulting in increased child anxiety, it is also acknowledged that parents may engage with such parenting behaviours in response to elevated levels of child anxiety or BI. For example, in their revised theoretical model for the aetiology of child social anxiety, Spence and Rapee (2016) note that the effect of parenting on social anxiety may be reciprocal rather than direct (i.e. that an overprotective

parenting style may communicate threat and thus increase anxiety, *or*, that child anxiety may elicit an overprotective parenting style). However, an important methodological limitation with the research on parenting and child anxiety is that the majority of this research is cross-sectional in nature, with few studies examining these effects in experimental paradigms or longitudinally (McLeod et al., 2007; Spence & Rapee, 2016).

Second, the types of parenting that increase risk for child anxiety may differ for mothers and fathers (e.g. maternal overprotection, paternal rejection) (Möller, Nikolić, Majdandžić, & Bögels, 2016; Spence & Rapee, 2016). Whilst, more research is required to support these claims, what is missing in particular is an understanding of the father's role in the aetiology of childhood anxiety disorders (see Bögels & Phares, 2008 for a discussion of this issue). Of importance is that the father's contribution is often aggregated with maternal responses, encapsulated in the terms 'parent' or 'parenting', or the father's influence is simply ignored as too few fathers are included in research studies to generate potential effects. Spence and Rapee (2016) argue that it is clear that mothers *and* fathers play a role in the aetiology of anxiety in children, referring to the role of challenging parenting behaviour (discussed below) and its plausibility as a potential parenting mechanism that may be particularly important for fathers. Prior to reviewing this parenting behaviour, additional methodological barriers of the literature to date need to be considered.

Third, the definition and operationalization of parenting behaviours is inconsistent and varies greatly across studies. For example, parental control may also be examined through the terms: overprotection, overinvolvement, overcontrol, psychological control, and behavioural control. Thus, clearer articulation and definition of parenting behaviours is required as the 'subdomains' of these parenting constructs have been known to obtain different strengths of effects with respect to child anxiety (see the meta-analysis of McLeod et al., 2007). Further, it is acknowledged that gathering data from different sources (e.g.

mothers, teachers, fathers, children, clinicians), utilising different outcome measures (questionnaires, clinical diagnosis, observed anxiety) and utilising differing methodologies for assessing parenting (questionnaires, interviews, and observational paradigms) has significant influence on the interpretation of findings (McLeod et al., 2007; Negreiros & Miller, 2014; Wood, McLeod, Sigman, Hwang, & Chu, 2003). Negreiros and Miller (2014) remark that in order to enable comparison across studies, consistency in the definition of constructs and methodologies utilised to assess parenting and anxiety is required. In sum, there are numerous methodological limitations in the parenting-anxiety literature, and these factors need to be considered when interpreting this literature.

Exploring the role of Fathers in Child Psychopathology

In 1992, two articles published by Phares and colleagues (Phares, 1992; Phares & Compas, 1992) emerged titled “Where’s Poppa? The Relative Lack of Attention to the Role of Fathers in Child and Adolescent Psychopathology” and “The Role of Fathers in Child and Adolescent Psychopathology: Make Room for Daddy”, which highlighted the dearth of research in this field examining the paternal role. The article by Phares and Compas (1992) included a review of the literature concerning parental factors relevant to developmental psychopathology from 1984-1991. The review uncovered that of the located articles, 48% exclusively examined mothers, 26% involved both mothers and fathers and analysed them separately, 25% potentially involved both parents however reported information in a manner in which the individual effects of mothers and fathers could not be examined, whereas only 1% (8 studies) exclusively examined fathers.

Focusing towards anxiety, the review by Phares and Compas (1992) described results from three studies that examined fathers of children with diagnosed anxiety disorders, and implied that these fathers may have elevated rates of psychopathology when compared to fathers of nonclinical controls (Bernstein, Svingen, & Garfinkel, 1990; Clark & Bolton, 1985;

Reeves, Werry, Elkind, & Zametkin, 1987). Further, the review also sought to identify studies examining children of fathers with an anxiety diagnosis. However, this review identified only one study examining fathers with anxiety disorders which were only examined when anxiety disorders were present in addition to parental depression, highlighting an absence of data on the functioning of children whose fathers have an anxiety disorder. Overall, conclusions from this review were that fathers were clearly underrepresented in developmental psychopathology research, and several reasons for this underrepresentation, ranging from practical issues in participant recruitment to a discussion of outdated societal norms were discussed in a subsequent paper (see Phares, 1992).

In 2005, Phares, Fields, Kamboukos, and Lopez (2005) conducted an updated review of the literature, “Still Looking for Poppa”. Utilising the same criteria as the earlier review, the results of the latter review were particularly discouraging; of the studies meeting inclusion criteria, 45% involved mothers exclusively, and 2.1% fathers exclusively. Analyses comparing this distribution of findings to the earlier review by Phares and Compas (1992) suggested that there were no significant differences over time in the inclusion of fathers in research on developmental psychopathology (see Phares et al., 2005).

Fathers and Childhood Anxiety Disorders

Despite only a small body of the empirical literature including fathers in child psychopathology research, and to a similar extent, child anxiety research (Bögels & Phares, 2008), there is some suggestion that fathers and mothers may play important yet differential roles in the aetiology of child anxiety (Möller, Majdandžić, de Vente, & Bögels, 2013). However, the evidence for this remains difficult to interpret as a clear pattern in the literature has not yet been uncovered; sometimes relationships between parenting and childhood anxiety are found for mothers but not for fathers, and vice versa. A glaring issue that contributes to our lack of clear understanding of parental gender is the continued focus in the

literature on the maternal role, and, when fathers are included, there is often an overrepresentation of missing fathers, combined with a lack of information about these missing fathers (see Creswell et al., 2011; Möller et al., 2013).

In an attempt to provide a clearer summary of the association between fathers' parenting and childhood anxiety disorders the next sections include a review of the literature including a quantitative summary of studies examining paternal parenting behaviours compared to maternal parenting behaviours and their association with childhood anxiety disorders. Importantly, given the overarching aim of this thesis; to explore the relationship between fathers' parenting behaviours and anxiety disorders in children, we then focused this review to examine the empirical evidence for the association between fathers' parenting behaviours related to child anxiety disorders in the domains of control, rejection, and modelling. Thus, this review provides a summary of the empirical evidence examining 'traditional' parenting behaviours suggested to be related to childhood anxiety, specifically for fathers. Following this, the theoretical models proposing a specific role for the father in the aetiology of childhood anxiety via a novel parenting domain, challenging parenting behaviour (CPB) are presented, and a review of the recent empirical literature examining CPB is provided.

Fathers' parenting behaviours: A review. There has been extensive research and theory focused towards the role of parenting behaviours and their association with the development of childhood anxiety disorders, however, previous reviews and meta-analyses (e.g., McLeod et al., 2007), have found that parenting explains relatively little of the variance in childhood anxiety (approximately 4%). A problematic occurrence in the literature is the tendency for data pertaining to mothers and fathers to be aggregated (Phares & Compas, 1992). Further, in order to be able to clarify the role of fathers in developmental psychopathology, Phares and Compas (1992) note that an important first step is the

acquisition of data regarding the effect of parenting on anxiety that can be uniquely attributed to fathers. In a similar manner to Phares and Compas (1992) and Phares et al. (2005), we wanted to estimate the dispersion of studies examining the role of fathers' parenting behaviours compared to mothers' parenting behaviours specifically in the domain of childhood anxiety disorders. Further, we focused this review on parenting behaviours (reviewed earlier) proposed to be salient towards childhood anxiety disorders; control, rejection, and modelling (McLeod et al., 2007; Wood et al., 2003).

Inclusion criteria. For consistency with the literature examining the associations between parenting behaviours and childhood anxiety disorders, our search terms and inclusion criteria were based on those utilised by McLeod et al. (2007). Accordingly, studies were included in the review if they fulfilled the following: (a) utilised a measure of parenting which examines the direct relationship of one parent or both parents towards the target child; (b) included a measure of child anxiety or children were diagnosed with an anxiety disorder (i.e. the study included either self-report or diagnostic measurement tools); (c) the relationship between parenting and childhood anxiety was tested statistically; and (d) the mean age of the children was less than 19 years of age. Studies were excluded if: (a) they were published in a language other than English; (b) the population were non-human species; and (c) articles that were presented in the form of case studies, letters, editorials, guidelines, books, dissertations, reviews and unpublished studies were excluded.

Search strategy. Six electronic databases (PsycInfo, Medline, Embase, Cinahl, Scopus and Cochrane Library), were searched from their respective inception until January 2014. Where possible, searches were limited to the English language and Human population. Databases were searched using the following terms: (Anxi* OR Worr* OR Fear* OR Internali* OR OCD OR panic OR Phobi* OR Shy* OR Somat*) AND (Father* OR Paternal OR Mother* OR Maternal OR Parent* OR Rearing style OR Rearing practices OR Sociali*)

AND (Child*). A comprehensive breakdown of the selection of studies according to the inclusion and exclusion criteria is presented in Figure 1.1 below. All identified citations were exported to Endnote X8 citation management software where duplicates were removed. Remaining citations were uploaded to the Web-based systematic review software, DistillerSR ("DistillerSR ", 2011). DistillerSR was used for the purposes of developing forms for respective title and abstract screening according to the stated eligibility criteria. Potentially relevant abstracts were retrieved for full text review. Overall, this search produced a total number of 936 articles that were assessed against the inclusion and exclusion criteria. Of these, 217 were further screened to provide a summary of the studies including mothers versus fathers, similar to the review by Phares and Compas (1992).

Of the 217 articles and dissertations identified, 98 (45%) involved mothers only, 49 studies (23%) involved both fathers and mothers and analysed them separately, 68 (31%) either included both fathers and mothers but did not analyse them separately, involved “parents” and did not provide details of how many mothers and fathers participated, or alternatively, aggregated “parenting” data, and only 2 studies (1%) involved fathers only. Whilst these results pertain specifically to the investigation of childhood anxiety disorders, the pattern of findings on the distribution of mother and father papers mirrors those obtained by Phares and Compas (1992) in their examination of parenting and child psychopathology more broadly, conducted over 25 years ago. As we were specifically interested in describing the relationship between fathers’ parenting behaviours towards childhood anxiety, only 51 texts were screened for further review (49 studies examined mothers and fathers and analysed data separately, 2 studies examined fathers specifically). Of these 51 studies, 45 were included for further empirical review. Studies reporting relationships between parenting and anxiety post-treatment were excluded ($n = 3$), and studies with insufficient details to calculate the significance and direction of effects were excluded ($n = 3$).

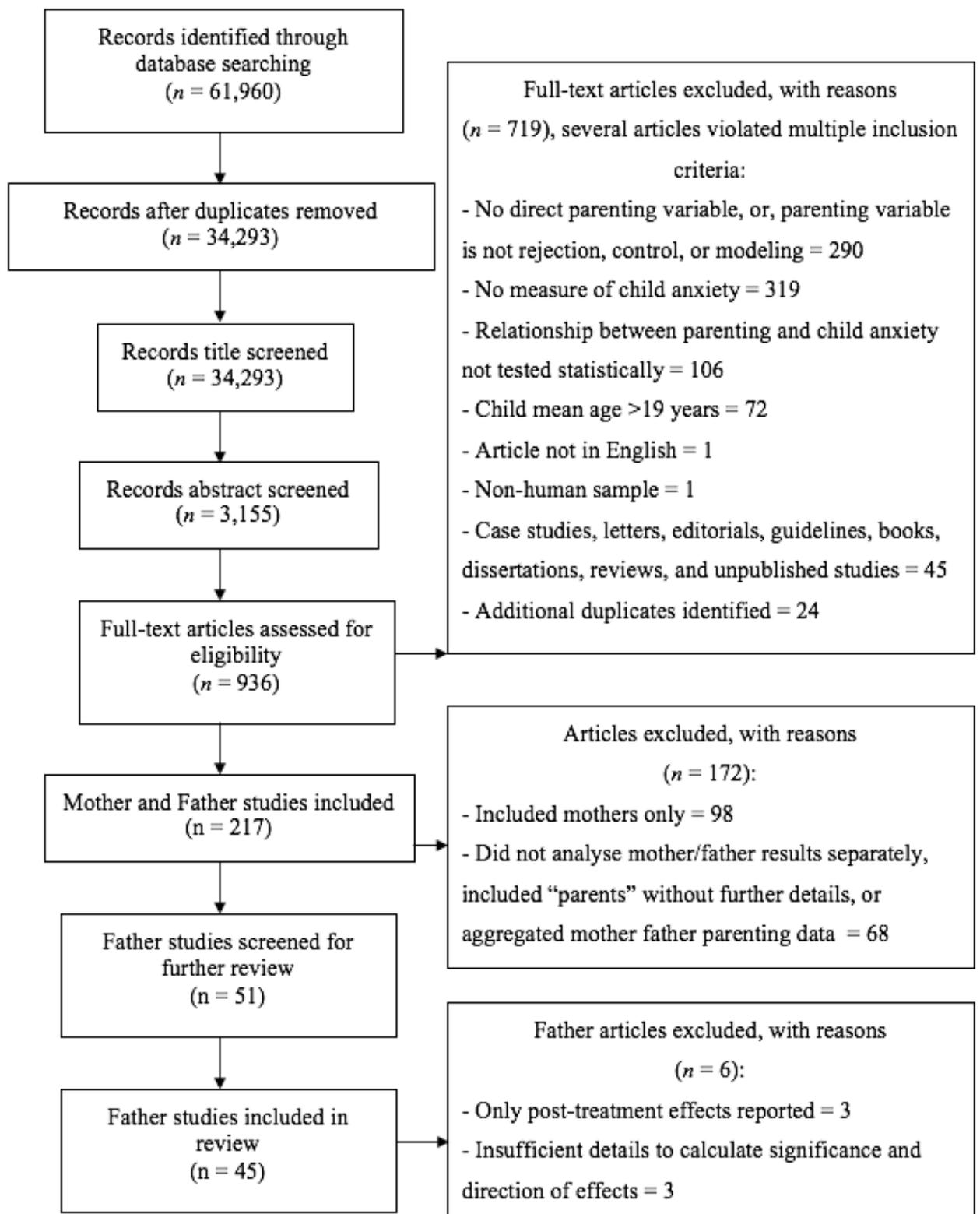


Figure 1.1. Flow Diagram of Review Process for Study Selection.

Information extracted from 'father' papers. The following information pertaining to fathers was extracted from each study: (a) study demographic information including ethnicity, country of study, study setting (i.e. school, home, or laboratory), child age, child gender, and number of fathers; (b) information relating to the independent variable, parenting including the name of the measurement used, parenting domain measured (i.e. rejection, control), parenting sub-dimension measured (i.e. warmth, aversiveness), who the informant was (i.e. observer, child, parent), and the method of the measurement used (i.e. observational, self-report, partner-report); (c) information pertinent to the outcome variable, child anxiety including the name of the measurement used, type of anxiety (i.e. social anxiety, OCD, GAD), who the informant was (i.e. teacher, mother), the method of measurement used (i.e. structured clinical interview, self-report), the scale of the child anxiety measure (i.e. categorical versus continuous). Importantly, the results are summarised as follows: (a) Relationship expected ($p < .05$), (b) Unexpected relationship ($p < .05$), Relationship not statistically significant ($p > .05$). To clarify 'Relationship expected' means that a positive association was obtained whereby greater paternal control, rejection, or modelling of anxious behaviour was associated with more child anxiety, 'Unexpected relationship' indicates results were obtained opposite to the hypothesised direction such that greater paternal control, rejection, or modelling of anxious behaviour was associated with less child anxiety.

Sample of studies. The 45 studies included for further review were published from 1988 to 2013 and provided a total of 202 associations of the relationship between fathers parenting behaviours and child anxiety, due to the various measures of anxiety and parenting utilised within the studies. The included studies examined fathers parenting behaviour and child anxiety in samples of children between 0.99 and 18.6 years of age ($M = 10.72$ years), and reported on 10,779 children and approximately 5,172 fathers (the number of fathers is likely greater as this number was occasionally unclearly reported). Appendix i includes all

data pertaining to this review; Table 1.1 summarises the sample characteristics of the included studies, and Table 1.2 summarises the findings of the studies included in the review. The studies included in the review are provided in the reference list of Appendix i.

Summary of findings. For the overall sample, significant associations were obtained between fathers' parenting behaviours towards childhood anxiety symptoms and disorders on 82 occasions out of 202, that is approximately 40% of studies included in the review found a significant relationship, in the expected direction, between fathers' parenting behaviours and child anxiety. These relationships were then further examined within their respective parenting domains. For paternal control, 76 studies examined the association between paternal control and child anxiety, and of these 30 (39%) obtained significant results in the hypothesised direction, that is that greater paternal controlling behaviours were associated with greater child anxiety. A similar pattern of findings was obtained for paternal rejection, where 31 out of 101 associations (approximately 31%) obtained significant results in the hypothesised direction (i.e., that greater rejection was associated with greater child anxiety, or alternatively, that greater warmth was associated with lower child anxiety). For paternal modelling of anxious or avoidant behaviour, a different pattern of findings was obtained whereby 21 out of 24 associations (approximately 88%), obtained significant results within the hypothesised direction (i.e. that greater modelling of anxious or avoidant behaviour was associated with greater child anxiety).

In light of the aforementioned difficulties within the parenting literature in terms of limited comparability across studies that utilise differing methodologies for the assessment of anxiety and parenting, studies were grouped, where possible, in terms of parenting methodology variable and anxiety variable. When fathers' parenting was measured via questionnaire, 74 out of 178 associations (approximately 42%) were in the hypothesised direction, when an observational methodology was applied 7 out of 23 associations (30%)

were in the hypothesised direction. In a category defined as ‘other’ parenting methodology, one study utilised an interview to assess fathers’ behaviours (Hudson & Rapee, 2005) and one a vignette (Bögels, Stevens, & Majdandžić, 2011). Findings of the study by Bögels et al. (2011) were significant in the hypothesised direction, whereas the study by Hudson and Rapee (2005), which assessed paternal control via interview, did not obtain statistically significant differences in fathers’ behaviours between anxious and non-anxious children.

In grouping studies by anxiety measurement methodology, when measured via clinical diagnostic assessment, 9 out of 48 associations (approximately 19%) obtained results in the hypothesised direction, via questionnaire 72 out of 151 statistically significant associations were obtained (approximately 48%). Diversely, four associations measured across two studies assessed anxiety via observation and none of these associations obtained statistically significant results.

Figure 1.2 below provides a summary of the statistically significant findings obtained, in the expected direction, for the three parenting behaviours; rejection, control and modelling. The parenting behaviours are grouped by parenting methodology; observational, questionnaire, and other.

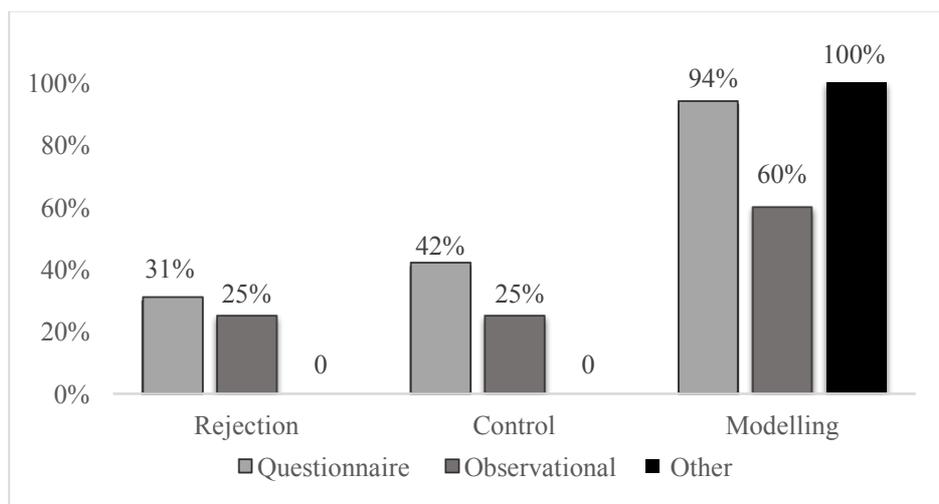


Figure 1.2 Display of significant findings for paternal Rejection, Control, and Modelling grouped by parenting methodology.

This review of the literature examined the relationship between parenting behaviours; rejection control, and modelling, towards childhood anxiety and provides a summary of the empirical literature to date specifically for fathers' parenting behaviours. This review highlighted several important points. First, whilst it is frequently acknowledged that fathers are underrepresented in the child anxiety literature, this review provides a quantitative summary to this argument, where it was found that out of 217 studies, only 51 of these could be considered for further analysis due to a tendency in the field to focus research examining parenting towards mothers, to aggregate the information between mothers and fathers, or alternatively, to provide insufficient details pertaining to fathers precluding their inclusion. Second, this review highlighted that despite underrepresentation in the literature, a number of studies that have examined the relationship between fathers' parenting behaviours and childhood anxiety, obtained significant associations. Third, the results of this review suggest that the relationship between the parenting behaviours of rejection, control and modelling may be slightly different between mothers and fathers. For example, in the literature reviewed earlier, there has been a strong argument for the relationship between parental (maternal) control and childhood anxiety disorders, and that this result has been more consistently obtained in the empirical literature than results examining the relationship between rejection and modelling with child anxiety. However, the results of this review suggest that for fathers the parenting behaviour of modelling of anxious or avoidant behaviour may have a stronger association towards childhood anxiety, highlighting that research in this field should continue to investigate the role of both caregivers when conducting research examining parenting.

It is important to note that this review included articles published until January, 2014. Since that time, additional articles have emerged which have included the examination of paternal parenting behaviours and childhood anxiety disorders. For example, Fliet Daemen,

Roelofs and Muris (2014) examined the relationship between fathers' overprotection and child anxiety in a sample of non-clinical children aged 2 to 6 years and found no evidence of a statistically significant relationship. Similarly, Borelli, Margolin and Rasmussen (2015), attempted to examine the predictive relationship between parental overcontrol and child anxiety symptoms, whilst a statistically significant association was obtained for mothers, evidence of this relationship for fathers was not supported. Morris and Oosterhoff (2016) examined parental rejection and control via observation and the relationship to child-reported general anxiety, social anxiety, and depression. Fathers' critical statements (rejecting behaviour) were associated with child-reported depression but not anxiety.

As discussed earlier, there are significant methodological limitations that impact the comparability of findings across studies, however taken together, the results of this preliminary summary suggests that fathers' parenting behaviours of rejection and control, have been found to be related to child anxiety in only a small proportion of studies. Whilst we were unable to identify studies published between 2014-2017 that specifically examined fathers' modelling, the findings of our larger review suggest an association between fathers' modelling and child anxiety was more consistently evident, with 87.5% of studies showing that greater modelling of anxious or avoidant behaviour, was associated with higher levels of child anxiety. Thus, this qualitative review has suggested that children may be particularly susceptible to the demonstrations of anxious or avoidant behaviours from fathers. Further, it is noted that the majority of studies included in this qualitative review were cross-sectional in nature, highlighting that longitudinal designs (including fathers in the sample), are warranted. Whilst an important area for continued research may be the examination of parenting styles that model or display anxiety in front of the child, and the impact on subsequent child anxiety, studies confirming the contrary are also warranted. For example, studies that examine the impact of parenting behaviours that model confidence, encourage bravery, or

expose children to novelty or feared objects, and their potential role towards the reduction of child anxiety are important. In fact, one recent area of research with a growing empirical base, is the study of challenging parenting behaviour (CPB).

Challenging Parenting Behaviour (CPB)

Theoretical models of CPB. In their review of the empirical literature, concerning paternal factors related to child anxiety, Bögels and Phares (2008) summarised the evidence of bottom-up, top-down, cross-sectional and longitudinal studies and concluded that if fathers are not involved, do not display warmth, are anxious, and do not promote independence and bravery, children may be at risk for anxiety. Further, the authors concluded that there is ample evidence that fathers play an important and different role to mothers in terms of their socialisation of children, and protection against anxiety. Together, these factors prompted the development of a preliminary theoretical model discerning between maternal and paternal roles throughout various stages of child development that, in combination with a child's temperamental disposition (for example, behavioural inhibition), may determine whether or not a child is at risk for anxiety.

In their theoretical models Bögels and Phares (2008) and Bögels and Perotti (2011) suggest that the father's specific role in child anxiety aetiology, or prevention thereof, may be through this concept of CPB. CPB may be considered considerable to the contrary of modelling of anxious behaviour whereby parents playfully challenge their children, encouraging them to push their limits and take safe risks (Majdandžić, Möller, de Vente, Bögels, & van den Boom, 2014), and is suggested to be protective against anxiety (Bögels & Perotti, 2011; Bögels & Phares, 2008). Whereas warmth and autonomy granting are fairly passive in execution, CPB is an active extension with physical (e.g. tickling, rough-and-tumble play), socio-emotional and verbal components (e.g. verbal encouragement, social assertion), as well as the modelling of challenging parenting behaviour by the parent (Majdandžić, de Vente, &

Bögels, 2015; Majdandžić et al., 2014). This model suggests that during infancy and early childhood the fathers' role is to engage in physical or so named rough-and-tumble or challenging play, whereas the maternal role is focused towards care and protection. It is proposed that if a father is anxious, this may prevent him from engaging in this type of play, and consequently the child may miss out on opportunities to exhibit risky behaviour, cope with challenging events, and adapt to novelty, indirectly enhancing their anxiety.

An evolutionary approach is proposed in terms of explaining the differences between maternal and paternal parenting roles (Bögels & Perotti, 2011; Möller et al., 2013). These evolutionary perspectives suggest that, men have been specialised in confronting the external environment, managing encounters with potentially dangerous animals and unfamiliar humans, whereas mothers have been specialised in a nurturing role (Bögels & Perotti, 2011). The authors argue that this is of influence to child anxiety, as anxiety poses its greatest difficulties outside the family sphere, such as with factors related to strangers, unfamiliar situations, and animals. It is therefore argued that fathers may in fact have more influence over child anxiety development than mothers, as anxiety typically occurs in response to novelty or encounters with the outside environment (Bögels & Perotti, 2011). The empirical investigation of this parenting domain remains in its infancy, and is yet to be empirically tested outside The Netherlands, consequently, further empirical evaluation of this construct is required.

CPB. Although the relationship between the parenting behaviours rejection, control, and modelling with anxiety has been extensively examined, CPB, by contrast, is a novel concept in the literature. The earlier literature review examining paternal rejection, control and modelling was conducted with studies published up to January 2014, a time when no empirical papers examining CPB had been published. Since that time, a small yet growing

body of empirical research has emerged. Findings from these studies have typically indicated that fathers' CPB is associated with less child and infant anxiety.

Two studies have tested this relationship empirically (Majdandžić et al., 2014; Möller, Majdandžić, & Bögels, 2015), and one study has evaluated the measurement of this novel construct (Majdandžić et al., 2015). Majdandžić et al. (2014) investigated the role of CPB towards child social anxiety (measured via observation with a detailed meso-level coding system). Results of this longitudinal study identified that fathers' CPB was found to decrease observed social anxiety in first born, 4-year-old children, over a period of six months. Similar results were obtained by Möller et al. (2015), when CPB and infant fear were measured by questionnaire measures; fathers' self-reported CPB was significantly negatively associated with infant anxiety (in a sample of 10-15-month-old infants).

The picture for maternal CPB in these studies was less clear. Majdandžić et al. (2014) found maternal CPB to be associated with an increase in child social anxiety in 4-year old children over a 6-month period. Although Möller et al. (2015) found no significant correlation with greater infant anxiety, the authors comment that a trend was identified, where maternal CPB was borderline significantly positively associated with infant anxiety. In their recent meta-analysis on this topic, Möller et al. (2016) concluded that fathers' CPB was significantly related to less child anxiety, whereas mothers' CPB was not significantly related to child anxiety.

In addition to the examination of the relationship between CPB and child anxiety, the reliability and validity of the questionnaires and observational assessments of CPB has also been assessed Majdandžić et al. (2015). In terms of CPB's relationship towards traditionally examined parenting behaviours, Majdandžić et al. (2015) found CPB to be negatively related to overprotection, and positively correlated with warmth. Further, the reliability of the

questionnaire and observational measures of CPB was found to be good, and significant convergence between these measures provided support for the validity of CPB.

Parental anxiety and CPB. Important to also consider is how parent anxiety may influence challenging parenting behaviour. Bögels and Phares (2008) and Bögels and Perotti (2011) suggest that if the father's role is to engage in challenging behaviour such as rough-and-tumble play and the encouragement of safe-risk taking, paternal anxiety may interfere with such behaviours. Möller et al. (2015) were the first to explore this relationship, and found that when parental anxiety was measured via self-report questionnaire, mothers' generalised anxiety symptoms and fathers' social anxiety symptoms were associated with less CPB (measured via questionnaire), towards their 10 to 15-month-old infants. Comparatively, these parental anxiety symptoms were associated with greater overinvolvement from both mothers and fathers. Möller et al.'s (2015) results are in line with the theoretical model proposed by Bögels and Perotti (2011); if a father is socially anxious, he perceives the social world as dangerous and as a result may not be able to fulfill the parenting role of challenging the child's behaviour. Bögels and Perotti (2011) argue that when the father is socially anxious, he may exhibit more overinvolvement to ensure child safety. However, given the limited number of studies in this area, (similar to the parenting behaviours of rejection, control, and modelling of anxious responses), the role of parental anxiety towards CPB requires further evaluation.

Purpose of Thesis

To summarise, concepts examined in this thesis aim to extend knowledge in terms of the role of parenting in the aetiology of childhood anxiety disorders. Rather than traditionally studied relationships between maternal behaviours, anxiety, and childhood anxiety disorders, this thesis includes the empirical investigation of the relationships between the novel parenting construct (CPB), parental anxiety, and childhood anxiety disorders. And,

importantly, this thesis includes the examination of fathers. This thesis aims to contribute to a growing body of literature addressing the gap on the role of fathers' in child anxiety aetiology. Given the relative novelty of CPB in the literature, there was only one newly-developed measure to assess this domain, the Challenging Parenting Behaviour Questionnaire (CPBQ4-6; Majdandžić, de Vente, & Bögels, 2010). Consequently, an additional aim of this thesis was to contribute to the psychometric evaluation of this measure, as well as to provide alternative methods to assessing CPB.

Given the aforementioned acknowledgement in the literature of the important role of mothers' parenting and anxiety towards child anxiety development, and concurrent ambiguity with respect to maternal CPB, we also wished to continue to explore the role of maternal CPB towards childhood anxiety disorders. Also, given the associations between predisposing factors (i.e. inhibited temperament), parenting behaviours, and child anxiety, we also wished to examine the link between CPB and temperament style, BI.

Overview of Thesis Chapters

The following thesis chapters include four empirical papers, and a general discussion. The studies in this thesis are designed to evaluate the novel parenting domain of CPB and its association with childhood anxiety. Further, this thesis aims to address the gap of the underrepresentation of fathers in research in this field, contributing towards a growing body of research examining the role of fathers towards childhood anxiety disorders. Each empirical paper has been formatted for journal publication. Given the scope and format of these papers submitted for publication, some repetition is unavoidable. As the target journals vary in their formatting requirements, slight changes have been made to the empirical papers to create consistency throughout the thesis. Namely, we have adjusted table layouts to improve readability, used Australian/UK spelling throughout, and applied APA formatting and referencing (American Psychological Association, 2010). For ease of reference, in-text

citations pertaining to specific chapters within the thesis are contained with the relevant chapter number. All figures and tables in Chapters 2-5 are located at the end of each chapter, after the references.

Chapter 2 presents the first empirical paper “Recalled Challenging Parenting Behaviour and Anxiety in Adulthood: A Retrospective Cohort Study” and examines recalled challenging parenting behaviour in a community sample of adults. The use of retrospective studies linking recalled parenting behaviours and current anxiety has provided an important platform for establishing the role of parenting behaviours in anxiety aetiology as well as the development and evaluation of measures used to assess these parenting constructs. Importantly, this paper examines the underlying factor structure of recalled CPB during childhood, and explores the relationships between recalled challenging parenting behaviour and adults’ current anxiety. This study examines recalled challenging parenting of both mothers and fathers as whilst this behaviour is hypothesised to be salient for fathers, understanding of this parenting behaviour in either parent gender is not yet well established.

Chapter 3 “The Relationship between Challenging Parenting Behaviour and Childhood Anxiety Disorders,” extends upon the findings of the previous chapter by examining the relationship between challenging parenting behaviour and childhood anxiety concurrently, in a community sample of preschool-aged children. Child anxiety was examined through both questionnaire and diagnostic measurement tools. Like Chapter 3, this study continues to examine the relationship of challenging parenting behaviour in both mothers and fathers. Diversely, this study also examines the impact of parent anxiety on challenging parenting behaviour.

Chapter 4 “Fathers’ Challenging Parenting Behaviours and Anxiety towards Childhood Anxiety Disorders: A Novel Computerised Task” continues to examine the relationship between CPB and anxiety in a community sample of preschool-aged children,

through the development of a new measure for assessing this behaviour, a novel computer task. The sample for this study consisted of 31 families from the study presented in Chapter 3, and 36 families recruited specifically for this study (Chapter 4). For this study, we chose to focus explicitly on the role of fathers, and, building upon the conclusions of Chapter 3, we examined CPB at the sub-domain level; including domains such as paternal risk-taking and rough-and-tumble play. Like Chapter 3, we continued to examine the impact of paternal anxiety towards CPB. In contrast to our previous studies, we decided to also examine the relationship of fathers' CPB to the temperament style of behavioural inhibition (BI), an identified precursor to anxiety.

A growing amount of empirical studies examining the relationship between CPB and child anxiety has emerged from The Netherlands, where the questionnaire measure used to assess the construct of CPB was developed. Chapter 5 includes the final empirical paper "The Structure of Challenging Parenting Behaviour and Associations with Anxiety in Dutch and Australian Children." This paper is a collaborative effort from two research teams combining data to assess the measurement invariance of the Challenging Parenting Behaviour Questionnaire (CPBQ4-6; Majdandžić et al., 2010) across Dutch and Australian parents of preschool-aged children. This study examined differences in levels of CPB across mothers and fathers and across the two countries. Consistent with the remaining papers of this thesis, this paper also examined the relationship between CPB and childhood anxiety.

Chapter 6 contains the general discussion, integrating the findings from the papers included in this thesis. In particular, this chapter outlines the unique contributions of each study, theoretical and clinical implications of the research, limitations, and thesis conclusions.

Finally, Appendix i presents the tables and references pertaining to the literature review presented in this Chapter (Chapter 1). Appendix ii presents the coding manual that was written to code the verbal behaviours exhibited by fathers during the Challenging

Parenting Behaviour Computer task and is a supplement to Chapter 4. Appendix iii includes information relating to ethics approval for the research.

To summarise, the current thesis contributes to the existing body of literature on the role of parenting behaviours related to childhood anxiety, with particular focus towards including examination of fathers, an underrepresented group in this literature. In particular, this thesis concentrates on a novel parenting domain, challenging parenting behaviour, with a focus towards the methodological examination of this construct and establishing an empirical base for CPB with respect to childhood anxiety disorders.

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The following chapter presents the first empirical paper “Recalled Challenging Parenting Behaviour and Anxiety in Adulthood: A Retrospective Cohort Study”. This paper utilises Exploratory Factor Analysis to determine the underlying factor structure of a measure for assessing recalled CPB during childhood. It then examines the association between recalled CPB and current anxiety symptoms in a community sample of adults. This paper uses a retrospective design as a first step in examining the relationship between perceived CPB and current offspring anxiety.

Chapter 2.

Recalled Challenging Parenting Behaviour and Anxiety in Adulthood: A Retrospective

Cohort Study

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Abstract

This research examines the relationship between recalled challenging parenting behaviour (CPB) and adult anxiety and aimed to determine the underlying latent factors involved in CPB. CPB is a novel parenting construct that involves the encouragement of children to go beyond their own limits and engage with concepts they may find scary or that destabilises them, in a playful and fun way. Participants in the current study were 386 undergraduate psychology students (M age = 19.89 years, SD = 4.6; range 17-56). Questionnaire measures of CPB, anxiety, and social anxiety were delivered to participants via an online survey. An exploratory factor analysis was conducted using Principle Axis Factoring with Oblimin rotation. This identified three latent constructs underlying adults recall of CPB during childhood; parental encouragement of social assertion ('Social'), parental encouragement to engage in novel or new situations ('Novelty'), and intentional teasing ('Teasing') CPB. Both mother and father Social and Novelty CPB was associated with lower report of adult anxiety. Whilst only fathers' Teasing was able to predict adult anxiety, the direction of this association was contrary to hypotheses. The implications of these identified three sub-domains of CPB and their relationship towards anxiety in adulthood are discussed.

Keywords: Challenging Parenting Behaviour, Anxiety, Exploratory Factor Analysis.

Anxiety disorders are amongst the most common mental health disorders in the general population across developmental periods (Kessler et al., 2005). These disorders are frequent, have high rates of comorbidity, and are often linked with impairment in social, academic, and vocational domains (Kessler et al., 2005). The interference, reduced quality of life, and chronicity associated with these disorders (Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007; Rapaport, Clary, Fayyad, & Endicott, 2005) has ensued exploration of factors involved in their aetiology and maintenance. Of these factors, parenting characterised by greater rejection and control has been associated with both the development, and maintenance, of anxiety disorders (e.g. Hudson & Rapee, 2001; Muris, 2002).

These parenting behaviours have been extensively researched and the focus of several reviews and meta-analyses (McLeod, Wood, & Weisz, 2007; Möller, Nikolić, Majdandžić, & Bögels, 2016). A review of these well-established parenting behaviours and their association with anxiety in offspring is beyond the scope of this paper, however, the most recent meta-analysis in this field by Möller et al. (2016) provided an overview of a growing body of research for a more recently constructed parenting domain; challenging parenting behaviour (CPB) and its relationship towards childhood anxiety. CPB involves the playful encouragement of children to go beyond their own limits, and can encompass; rough-and-tumble-play and risk taking, and may also include: teasing, giving the child a fright, letting the child lose a game, and modelling of challenging behaviour by the parent (Majdandžić, Vente, & Bögels, 2015). Through these avenues, CPB supports the child in their exposure to surprising and new situations, which may buffer against anxiety development (Bögels & Phares, 2008). In their theoretical model, Bögels and Phares (2008) take an evolutionary approach and suggest that via challenging behaviour, *fathers in particular*, have an important influence over child development, as they prepare the child to interact with the external environment (for a full discussion see Möller, Majdandžić, de Vente, & Bögels, 2013). This

is proposed to be influential towards child anxiety, as anxiety poses its greatest difficulties outside the family sphere such as with factors related to strangers, unfamiliar situations, and the greater social environment (Bögels & Perotti, 2011).

Accumulating research in this area supports the idea that CPB acts as a protective mechanism against child anxiety (Majdandžić, Möller, de Vente, Bögels, & van den Boom, 2014; Möller, Majdandžić, & Bögels, 2015). Majdandžić and colleagues (2014) measured mothers' and fathers' CPB via observation and their children's *social* anxiety. Findings from this longitudinal study of 4 year olds showed that fathers' CPB was associated with decreases in observed child social anxiety, whereas mothers' CPB was associated with increases in observed child social anxiety, controlling for baseline child social anxiety. Similarly, in their study with 10-15-month-old infants, Möller et al. (2015) measured mothers' and fathers' CPB and infant anxiety via parental self-report and found that fathers' CPB was associated with less infant anxiety. They also found that mothers' CPB was not significantly correlated with greater infant anxiety. The preliminary empirical literature reviewed here implies that CPB may be particularly salient for fathers, whilst the role of mothers in this domain remains unclear. Further research into this construct is warranted in order to enhance understanding of the role of both mothers' and fathers' CPB and the relationship of CPB towards anxiety in offspring.

The research available to date has provided some support for a protective relationship between CPB and anxiety disorders in *early* childhood (e.g. Majdandžić et al., 2014; Möller et al., 2015). However, the relationship of this parenting behaviour towards anxiety *beyond* the preschool-age is yet to be explored. For example, we know little about challenging parenting in school age children (i.e. children aged between 7-12 years), nor adolescence (13-18 years), and the impact this parenting behaviour may have on individuals in later life. Given that we know little about the impact of early CPB on later anxiety, and, we wish to

apply a common methodological approach to exploring parenting constructs consistent with the literature (see below for a review), a retrospective examination of CPB was conducted in order to extend our understanding of this concept. Consequently, we wished to examine whether any aspects of CPB are salient enough such that the impact of CPB recalled during childhood may be associated with anxiety reported in later life.

The use of retrospective data to explore the role of early parenting in the aetiology of anxiety disorders has played a fundamental role in establishing the impact of certain parenting behaviours and has provided a platform for the development of measures to examine these behaviours for their continued study, prior to committing to their longitudinal exploration (e.g. Gerlsma, Emmelkamp, & Arrindell, 1990; Masia & Morris, 1998). Two of the most widely used adult measures of recalled parenting include: The Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), and the Egena Minnen Beträffande Uppfostran, which translates to “My Memories of Upbringing” (EMBU; Perris, Jacobsson, Linndström, Knorrning, & Perris, 1980). A number of empirical studies utilising these measures have generally demonstrated that adults with anxiety disorders recall their parents as both rejecting and controlling (Arrindell, Emmelkamp, Monsma, & Brilman, 1983; Gerlsma et al., 1990; Manicavasagar, Silove, Wagner, & Hadzi-Pavlovic, 1999; Parker, 1990; Rapee, 1997; Rapee & Melville, 1997). Historically, parenting characteristics such as overprotection were assessed via clinical impression (see for example Roth, 1959). Consequently, the development of retrospective instruments such as the PBI and EMBU provided a quantifiable and reproducible measurement of parenting behaviours (Parker, 1990). Of note for the current study, is that such instruments are considered to be particularly useful during the early exploratory phases of investigating variables and deciding “which variables are and which are not meaningfully related to the issue investigated” (Gerlsma et al., 1990, p. 273).

However, the use of retrospective self-report data is not without its limitations. For example, this methodology has been cautioned, due to a variety of cognitive and motivational factors (i.e. recall bias, social desirability effects), suggesting that people may be inefficient processors of information about their past (see Henry, Moffitt, Caspi, Langley, & Silva, 1994). Whilst these limitations are acknowledged, retrospective data collection is widely used, versatile, and permits the researcher to assess private events or cognitions not amenable to direct observation by the researcher (Metts, Sprecher, Cupach, Montgomery, & Duck, 1991). In addition to the practical advantages of retrospective data collection, these methods are advantageous in the preliminary stages of building theoretical constructs, allowing the researcher to assess and analyse a broad domain of private experiences (Metts et al., 1991). Moreover, retrospective data can afford the measurement of *perceived* parenting, that is, the individual's perceptions of their parents' behaviour. Whilst *perceived* parenting may not equate to the *actual* parenting received, several studies have emphasised a positive relationship between perceived parenting behaviour (i.e. perceived parental rejection and parental control) and anxiety (Grüner, Muris, & Merckelbach, 1999; Muris & Merckelbach, 1998).

To summarise, the overarching goal of the present study was to examine the relationship between recalled CPB and current adult anxiety. Specifically, we had three aims: (1) to explore the underlying factor structure of recalled CPB during childhood, (2) to examine the relationship between recalled CPB and adults' current anxiety, and (3) to examine any parental differences in recalled CPB. In line with these aims it was hypothesised that: (1) higher levels of recalled CPB will be associated with lower levels of current anxiety; and, in line with the theoretical model for this construct: (2) recalled CPB will be greater for fathers than for mothers. We also aimed to identify latent constructs underlying the measured variables using a data-driven approach and report the initial reliability and correlations with

measures of anxiety. For ease of utility and dissemination of the questionnaire, we also wanted to produce a final measure to have equal number of items in the mother and father versions of the scale.

Method

Participants

Participants were 386 undergraduate psychology students (M age = 19.89 years, SD = 4.6; range 17-56). Participants predominantly identified as being of female gender (76.4% female, 21.4% male, and 1.8% as other gender). The majority of the sample reported Oceanic ethnicity (51.6%), 26.9% Asian, 11.1% European, 6.7% North African and Middle Eastern, 1.8% Sub Saharan African, 0.8% People of the Americas, and 1% provided insufficient ethnicity information. Of these students, 75.6% were from homes where English was the first language. Students were asked to report on their family structure when they were aged between 7-12 years, the majority of students (89.1%) were from two-parent families with a mother and father, 9.1% were from families where the mother was the sole parent, 1.6% were from families where the father was the sole parent, and one participant described their family structure as consisting of two mothers. For the purposes of maintaining anonymity, analyses for this participant were only conducted with the first caregiver reported.

Measures

The Depression Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was administered to students in order to gain a quantitative measure of depression, anxiety, and stress, and is a widely-used measure of adult anxiety (Osman et al., 2012). It has good factor structure, concurrent validity and internal consistency, with Cronbach's alphas for the subscales found at .94 for Depression, .87 for Anxiety, and .91 for Stress (Antony, Bieling, Cox, Enns, & Swinson, 1998). In the present study, the Cronbach's alpha for the depression scale was .90, .85 for the stress scale, and .83 for the anxiety scale.

The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) was used to provide a quantitative measure of social anxiety symptom severity. The SIAS is a 20 item self-report measure where participants are required to rate fear of social interactions (e.g., “I am nervous mixing with people I don’t know well”) on a rating scale ranging from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*). Three items (5, 9, and 11) were reverse scored. Cronbach’s α in the present study was .94.

Students completed the Challenging Parenting Behaviour Questionnaire: Retrospective version (CPBQ-R), amended for the current study. The questionnaire was modified from the original Challenging Parenting Behaviour Questionnaire; 7-12-year version, (CPBQ 7-12; Majdandžić, de Vente, & Bögels, 2010). The modification of the questionnaire from parent to self-report allowed participants to report the CPB their parents displayed towards them when they were between the ages of 7-12 years old. This age range was selected as it was felt to be the most appropriate range for adults to recall childhood experiences of CPB. For example, earlier versions of the questionnaire such as the toddler and preschool versions, would be difficult for adults to recall. Further, the adolescent version of the measure was considered inappropriate as this period of development may be confounded by other developmental variables such as puberty. This decision was also guided by suggestions in the literature on other parenting instruments which suggested that including an age range or anchor would improve the specificity and clarity of results (Winefield, Goldney, Tiggemann, & Winefield, 1989). For example, the PBI instructs participants to recall the behaviours of each parent in their first 16 years (Parker et al., 1979). The CPBQ-R is a 43-item self-report scale that assesses challenging behaviour through students’ recollections of their parents’ encouragement of: risk taking, rough-and-tumble play, assertiveness, competition, social daringness, and teasing. Students were asked to rate statements about their parent’s interactions with them as a child (e.g., ‘My father/mother

would encourage me to stand up for myself”), on a 5-point Likert scale (1 = *Not Applicable*, to 5 = *Completely Applicable*). Branched logic was applied to the questionnaire based on obtained demographic information, this meant that if a participant indicated that when they were between the ages of 7-12 their family structure consisted of both a mother and father, the participant completed a mother and a father version of the CPBQ-R, if their family structure consisted of a sole parent, they completed the measure for the parent indicated. Five items were reverse scored. This is a newly developed measure and as yet no psychometric papers have been published on its reliability and validity, however, the psychometric properties of the younger age versions of this questionnaire (i.e., 4 months, 1 year and 2.5 years), have been found to be good, with CPB total scores ranging from $\alpha = .79$ to $.89$ (for mothers), and $\alpha = .80$ to $.88$ (for fathers) (see Majdandžić et al., 2015).

Procedure

Macquarie University Human Research Ethics Committee approved all procedures prior to study commencement. Students were recruited through the university research database, where, after reading information about the study, students could provide online consent to participating in the study in return for course credit for their time. Student responses were recorded online via the survey host, Qualtrics.

Data Analysis Plan

To examine the underlying factor structure of recalled CPB, an exploratory factor analysis was conducted. The relationship between recalled CPB and adults’ current anxiety (hypothesis 1) was examined through a series of hierarchical multiple regression analyses (MRA), whilst controlling for potential covariates (e.g. demographic variables such as gender). The hypothesis (2), that adults recalled CPB will be greater for fathers than for mothers, was examined via a series of Wilcoxon Signed Ranks Tests.

Results

Data Screening and Suitability for Factor Analysis

The data were screened for suitability for factor analysis using several well-recognised criteria. No outliers or out-of-range values were identified. The minimum amount of data for a factor analysis was satisfied, with a final sample size of 380 for mothers (6 participants were from a sole-father family), and 348 for fathers (2 participants had missing data on the scale), providing a ratio of over 8 cases per variable for mothers and fathers. Tabachnick and Fidell (2013) suggest that at least five cases for each item provide an adequate sample size for factor analysis in most circumstances. Following this principle, the minimum number of cases recommended for this analysis would be 215, with the present sample sizes being sufficient.

Inspection of the correlation matrix for the mother and father versions of the questionnaire revealed the presence of numerous coefficients of .3 and above, suggesting reasonable factorability. The Kaiser-Meyer-Olkin value for the mother version was .90, and .93 for the father version - exceeding the recommended value of .6 (Kaiser, 1970, 1974). Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance for both mother ($\chi^2(903) = 6794.70, p < .001$), and father versions ($\chi^2(861) = 8781.52, p < .001$), supporting the factorability of the correlation matrixes.

The 43 items of the Retrospective Challenging Parenting Behaviour Questionnaire (CPBQ-R) Mother and Father versions were individually subjected to Principle Axis Factoring (PAF) using SPSS version 23. PAF was used instead of Principle Components Analysis (PCA) as the primary purpose of this analysis was to identify the latent constructs underlying the measured variables using a data-driven approach. Further, an exploratory factor analysis (EFA) was considered more suitable than a confirmatory factor analysis as the concept of Challenging Behaviour remains in the preliminary stages of the empirical and

theoretical literature, further, this concept is yet to be examined retrospectively via adult self-report (for a rationale see Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Exploratory Factor Analysis - Father Questionnaire

For the initial unrotated factor solution on the father version of the questionnaire, the initial solution revealed the presence of 8 components with eigenvalues exceeding 1, explaining a total of 55.8% of the variance (with each component explaining 31.8%, 11.0%, 3.3%, 2.7%, 2.1%, 1.8%, 1.6% and 1.4% of the variance respectively). The eigenvalue greater-than-one rule has been reported to overestimate the number of factors to retain (Zwick & Velicer, 1986), and it has been recommended that multiple criteria are used when determining the number of factors to retain (Henson & Roberts, 2006), consequently, a parallel analysis (PA) was conducted utilising syntax provided by (O'Connor, 2000). Results from the PA were based on 1000 randomly generated data sets of the same sample size as the current study. The PA results identified that likewise; an 8-factor solution could be retained.

However, inspection of the communalities revealed that several items had communalities $< .4$, did not load onto any of the components, or cross loaded on several components (Costello & Osborne, 2005). Items that failed to meet these minimum criteria were individually removed (commencing with items displaying the lowest communality) and the PAF was re-run eight times until these desired criteria were obtained. Oblique (Direct Oblimin) rotation was used to aid interpretation of the components. A total of eight items were removed from the model following this process explaining 56.7% of the variance and resulting in a 5-component solution (each explaining 36.5%, 12.4%, 3.2%, 2.8% and 2.1% of the variance respectively).

Exploratory Factor Analysis - Mother Questionnaire

For the initial EFA, the PAF solution for Mothers revealed the presence of 10 components with eigenvalues exceeding 1. The first component not retained based on this

criterion had an eigenvalue of 0.976. This unrotated factor solution accounted for 48.4% of the variance of the CPBQ items, with Component 1 contributing 21.6% of the variance, with the remaining components contributing 10.9%, 3.3%, 3.1%, 2.3%, 1.7%, 1.6%, 1.3%, 1.3% and 1.2% respectively. Similar to the approach used for fathers, a PA was conducted and equivalent to the PAF, the PA suggested retention of all 10 factors.

However, similar to the solution obtained for fathers, the results revealed multiple items with communalities of $< .4$ and items that did not load onto any of the components. Again, items not meeting these criteria were removed, and, to aid in interpretation of the components, oblimin rotation was performed. A total of 22 items were eliminated from the model as they did not contribute to a simple factor structure and failed to meet the minimum criteria, resulting in a 4-component solution which explained 52.4% of the variance (individual components explained 27.3%, 16.8%, 4.8%, and 3.4% of the variance respectively).

Final Factor Solutions

In an attempt to establish consistency in the number of items across mother and father versions of the questionnaire, the additional 14 items that were removed from the mother version, were sequentially removed from the father version of the scale, whilst monitoring changes in variance. This 21-item father scale, explained 56.6% of the variance. However, an additional item needed to be removed due to a low communality, resulting in a 20-item scale, providing a 3-component solution, and explaining 57.8% of the variance.

For consistency, we returned to the mother scale and removed the additional item, this reduced the variance explained to 49.4% and six additional items revealed communalities $< .4$ or did not load onto a component. Once these items were sequentially removed from the model, the PAF of 14 items explained 55.6% of the variance resulting in a 3-component solution explaining 33.1%, 16.2%, and 6.3% of the variance respectively.

Consistent with our previous approach, and to maintain consistency in the number of items used for mother and father versions of the questionnaire, the six additional items were similarly removed from the father scale. The 14-item father scale explained 62.2% of the variance resulting in a 3-factor solution explaining 41.2%, 16.8%, and 4.3% of the variance respectively.

The three factors represented concepts pertaining to parental encouragement of social assertion ('Social'; 5 Items), encouragement to engage in novel or new situations ('Novelty'; 4 Items), and intentional teasing ('Teasing'; 5 Items). The pattern and structure matrix for these final mother and father factor solutions are presented in Table 2.1.

Factors for the father version were significantly and positively correlated: Social and Teasing $r = .25$; Social and Novelty $r = .73$; and Novelty and Teasing $r = .32$ (all p 's $< .01$), suggesting that factors may map onto a higher order construct representing fathers' overall CPB, so calculating a CPBQ-R total score is appropriate. For the mother version, two factors were significantly and positively correlated; Social and Novelty $r = .61$, $p < .01$, and Novelty and Teasing $r = .10$, $p < .05$. However, Social and Teasing were not significantly correlated ($r = .10$, $p = .062$), suggesting that creating a composite of these factors may not be appropriate. Due to these differences, we decided to use composite factor scores in further analyses and did not create a combined CPBQ-R total score.

Internal Consistency

Internal consistency for each of the factors was examined using Cronbach's alpha. The alphas for the mother version were good, $\alpha = .87$ for Social $\alpha = .81$ for Teasing, and $\alpha = .84$ Novelty. The alphas for the father version were also good, with $\alpha = .90$ for Social, $\alpha = .87$ for Teasing, and $\alpha = .86$ for Novelty. No substantial increases in alpha for any of the scales could have been achieved by eliminating further items.

Preliminary Analyses

All variables were checked for conformity to the assumption of normal distribution. Distributions for the social anxiety scores on the SIAS, and scores on the DASS anxiety and stress scales were not normally distributed. Square root transformations were performed on all variables but did not correct normality. Non-parametric tests on untransformed variables were performed. Where, non-parametric tests were not possible, analyses were performed with bootstrapping.

Table 2.2 shows the Spearman's Rho correlations amongst all continuous measures. Several small negative associations were found between mothers' and fathers' challenging behaviour and adult anxiety (as measured by the DASS stress and anxiety scales) and social anxiety (as measured by the SIAS). In contrast with expectations, a small positive association was found between mothers' and fathers' challenging behaviour on the teasing subscale and adult anxiety on the DASS anxiety scale ($r = .18$ and $r = .20$ respectively) and on the DASS stress scale ($r = .14$ and $r = .25$ respectively)

A series of one-way between groups analyses of variance were conducted, examining the relationship between demographic variables and variables measuring adult anxiety (SIAS total score, and DASS anxiety and stress scores). Mann-Whitney U Tests were conducted when demographic variables had no more than two categories, Kruskal-Wallis tests were conducted for demographic variables with three or more categories. The Mann-Whitney U Test indicated that the SIAS scores were significantly higher for participants who did not speak English at home ($Md = 31, n = 94$) compared to those who did speak English at home ($Md = 26, n = 289, U = 11345.00, z = -2.40, p = .02, r = .12$). A similar result was obtained for the DASS anxiety subscale for those who did speak English at home scoring higher on the DASS anxiety subscale ($Md = 6, n = 94$) than those who did not ($Md = 4, n = 289, U = 11163, z = -2.60, p = .009, r = .13$). No significant differences were found on the Kruskal-Wallis test for Ethnicity, Gender, or Family Structure demographic variables ($p > .05$).

Consequently, regression analyses were performed whilst controlling for whether or not English was the language spoken at home (English).

Maternal and Paternal Challenging Parenting Behaviour – Hypothesis 1

In order to compare mothers' and fathers' CPB scores (social, teasing, and novelty subscales) we ran a series of Wilcoxon Signed Rank Tests. As expected, significantly more CPB on the teasing subscale was reported from fathers ($Md = 2.20$) compared to mothers ($Md = 1.40$), $z = -11.16$, $p < .001$, with a medium effect, $r = .43$. For the remaining analyses, there were no significant differences between fathers' social CPB ($Md = 4.20$) and mothers ($Md = 4.00$), $z = -.89$, $p = .371$, or between fathers' encouragement of novelty ($Md = 3.75$), and mothers ($M = 3.75$), $z = -1.83$, $p = .067$.

Maternal and Paternal Challenging Parenting Behaviour and Adult Anxiety – Hypothesis 2

Separate hierarchical regression models were run for each outcome variable: Anxiety as measured by the DASS anxiety scale (DASSas), DASS stress scale (DASSss), and social anxiety as measured by the SIAS, after controlling for whether participants spoke English at home (English). English was included as a control variable as differences in SIAS and DASSas scores were obtained during preliminary analyses, where non-English speaking households reported greater levels of anxiety than English-speaking households. English was entered at Step 1, Mother and Father CPB as measured by the three subscales; Social, Teasing and Novelty, were entered at Step 2. Prior to conducting the hierarchical MRA's, all relevant assumptions were tested¹.

¹ Given the length of time some participants were required to recall, and that age is an indication of length of required recall, we re-ran all analyses controlling for age, and re-ran all analyses with an age-reduced sample (17-19 years). These additional analyses did not alter the pattern of results obtained. Consequently, all participants were maintained as length of recall did not appear to impact findings.

Maternal and paternal CPB and adult anxiety (DASSas). For the model examining mothers and fathers CPB and adult anxiety, measured through the DASS anxiety subscale, English was entered in Block 1 and accounted for a significant 1.2% of the variance in the regression model $F(1,339) = 4.126, p = .043$. In Block 2 the variables measuring CPB were added to the model. After controlling for English, these variables explained an additional 7.4% of the variance in Adult Anxiety on the DASSas $\Delta R^2 = .07, \Delta F(7,333) = 4.45, p < .001$. Fathers' Teasing and Social subscales on the CPB were the only significant predictors in the model, ($\beta = .21, p = .002$, and $\beta = -.18, p = .039$ respectively). The Unstandardized (B) and standardized (β) regression coefficients, squared semi-partial correlations (sr^2), and 95% Confidence Intervals (bias-corrected) for each of the predictors in this regression model are reported in Table 2.3. Standardized regression coefficients and significance values are reported based on 1000 bootstrapped samples.

Maternal and paternal CPB and adult anxiety (DASSss). For the model examining mothers' and fathers' CPB and adult anxiety, measured through the DASS stress subscale, English was entered in Block 1 and accounted for a non-significant 0% of the variance in the regression model $F(1,339) = .02, p = .896$. In Block 2 the variables measuring CPB were added to the model. After controlling for English, these variables explained an additional 7.5% of the variance in Adult Anxiety on the DASSss $\Delta R^2 = .07, \Delta F(7,333) = 3.84, p < .001$. Fathers' Teasing on the CPB was the only significant predictor in the model, ($\beta = .25, p = .001$). The Unstandardized (B) and standardized (β) regression coefficients, squared semi-partial correlations (sr^2), and 95% Confidence Intervals (bias-corrected) for each of the predictors in this regression model are reported in Table 2.4. Standardized regression coefficients and significance values are reported based on 1000 bootstrapped samples.

Maternal and paternal CPB and adult social anxiety (SIAS). For the model examining mothers' and fathers' CPB and adult social anxiety, measured through the SIAS,

English was entered in Block 1 and accounted for a non-significant 1.1% of the variance in the regression model $F(1,339) = 3.82, p = .051$. In Block 2 the variables measuring CPB were added to the model. After controlling for English, these variables explained an additional 5.7% of the variance in Social Anxiety on the SIAS $\Delta R^2 = .06, \Delta F(7,333) = 3.46, p < .001$. Following bootstrapping, none of the predictors in the model were statistically significant, however trends emerged for Fathers' Teasing ($\beta = .12, p = .052$) and Mothers' Novelty on the CPB ($\beta = -.15, p = .053$). The Unstandardized (B) and standardized (β) regression coefficients, squared semi-partial correlations (sr^2), and 95% Confidence Intervals (bias-corrected) for each of the predictors in this regression model are reported in Table 2.5. Standardized regression coefficients and significance values are reported based on 1000 bootstrapped samples.

Discussion

The purpose of the present study was threefold: to explore the underlying factor structure of recalled CPB during childhood, to examine the relationship between recalled CPB and adults' current anxiety, and finally, to examine any parental differences in recalled CPB. Overall, the findings showed three distinct factors underlying adults' recall of the challenging parenting received during childhood; parental encouragement of social assertion (Social), parental encouragement to engage in novel or new situations (Novelty), and intentional teasing (Teasing). These three factors demonstrated good internal consistency. Regarding the relationship between recalled CPB and current adult anxiety, significant relationships were found between fathers' intentional teasing and current adult anxiety, however these were not in the hypothesized direction where it was observed that higher recalled intentional teasing from fathers was associated with higher current anxiety. The remaining associations between mothers' and fathers' CPB and current anxiety were small however in the hypothesized direction. With regards to parental differences in recalled CPB,

it was found that adults recalled greater amounts of intentional teasing in their fathers compared to their mothers, and that mothers and fathers did not differ in terms of recalled encouragement of social assertion and recalled encouragement to engage in novel or new situations.

The overarching goal of the exploratory factor analysis was to explore the underlying factor structure of recalled CPB during childhood through identifying latent constructs underlying the measured variables. In doing so, we utilized a conservative, data-driven approach, with the hope to achieve a final measure that contained items that were consistent across mother and father versions of the scale. This was to ensure ease of utility of the scale as well as facilitate future dissemination. The EFA led to a significant reduction in the number of items on the scale, reducing from 43 to 14 items. This item reduction however, did not compromise the variance explained by the factor solution, where it was observed that the variance explained in the initial solution for fathers increased from 55.8% to 62.2%, and a similar pattern was observed for mothers (48.4% to 55.6%). Importantly, the final factor structure of the CPBQ-R scales provided a short self-report instrument which increases the research utility of the measurement tool, especially given that most participants needed to complete the measure twice, once for their mother and once for their father. Moreover, items on the three factors that were produced by the EFA conveyed consistent themes, facilitating the classification of these subscales, and, across these three subscales, good internal consistency was found.

When interpreting the results of the exploratory factor analysis, it is important to remember that these results apply to adults' recollections of parenting received during their childhood, between the ages of 7-12 years, and that, to the authors' knowledge, the original measure (CPBQ 7-12; Majdandžić et al., 2010) is yet to be evaluated within children of that age group. This is emphasized here as whilst two of the factors; encouragement of social

assertion (Social), and encouragement to engage in novel or new situations (Novelty), were reflective of the theoretical underpinnings of CPB, the items that remained for the so named ‘intentional teasing’ subscale appear to have a more negative connotation rather than the playful and light-hearted aspect of this parenting behaviour that was the intention of these particular items on the measure. Consequently, it is not surprising that adults’ who recalled their fathers and mothers as engaging in more direct intentional teasing behaviours reported higher anxiety on the DASS-21 anxiety and stress subscales. The results of the current study suggest that it may be meaningful to return to item development to ensure that these aspects of CPB are conveyed in a more non-threatening way in alignment with the theoretical construct of CPB (see Bögels & Perotti, 2011; Bögels & Phares, 2008). This is especially so for adult-recalled parenting, rather than parent-rated measures of interactions with infants or young children. Further it is noteworthy that the physical aspects of CPB, such as encouraging competition and rough-and-tumble play, did not emerge as underlying latent constructs when assessing adult recall of parenting during childhood.

Results from the present study suggest that the relationship between recalled CPB and anxiety did not emerge consistently across all measures of anxiety. For example, weak negative correlations were observed for recalled parental encouragement of social assertion (for both mothers and fathers) and current adult social anxiety; adults who recalled their parents to encourage social assertion reported less current social anxiety (as measured by the SIAS). Whereas no significant correlations were found between mothers’ and fathers’ encouragement of social assertion and anxiety as measured by the DASS-21. In the hierarchical regression models however, recalled paternal encouragement of social assertion emerged as the only significant predictor for adult anxiety on the DASS anxiety subscale but not for adult social anxiety on the SIAS. A potential explanation for this finding is that this result emerged after controlling for language spoken at home, whereas this variable was not

controlled for in the correlational analyses. These results suggest that further research is required in order to clarify the strength and direction of the relationship between recalled parental encouragement of social assertion and current adult anxiety, whilst also emphasizing the need for identification of potentially confounding demographic variables. In their recent meta-analysis by Yap, Pilkington, Ryan, and Jorm (2014) reported that for the parenting behaviour ‘Encouraging Sociability’, no effect size could be computed due to the limited number of studies examining this construct. Consequently, the findings of the present study contribute to a growing body of research in this area, however these findings also highlight a need for further studies in order to be able to clarify whether parental encouragement of sociability may be associated with lower levels of anxiety in offspring.

A similar pattern emerged for the relationship between recalled mother and father encouragement to engage in novel or new situations and current adult social anxiety, where, in the correlational analyses, this parenting behaviour was associated with lower reported current social anxiety on the SIAS. However, in the hierarchical regressions, despite a trend being identified for mothers, this parenting behaviour was not found to significantly predict adult social anxiety once controlling for whether or not participants spoke English at home. Further, no significant relationships were found between parental encouragement to engage in new or novel situations and the DASS-21 subscales. The lack of significant findings between recalled parental encouragement of social assertion and engagement with novel situations and current adult anxiety were unexpected. Whilst the continued investigation of CPB at the sub-domain level is warranted in order to obtain a better understanding of this construct, it is also plausible that the effects of recalled CPB from childhood may not be strong enough to impact anxiety levels in adulthood.

As mentioned previously, the results indicating a positive relationship between parental intentional teasing and increased adult anxiety on the DASS-21 were not anticipated.

Further, the results of the hierarchical multiple regression analyses indicated that this aspect of recalled parenting was particularly salient for fathers, over and above that of mothers, and after controlling for whether or not participants spoke English at home. These results help document important linkages between recalled childhood teasing and psychological adjustment in adulthood. When this parenting behaviour is broadened more generally into negative parenting behaviours, such as parental rejection, the findings of the present study relate closely to early empirical findings which have also utilized adult retrospective reports. These studies pertaining to rejection, typically concluded that anxious adults generally remember their parents as being more rejecting (Masia & Morris, 1998; Rapee, 1997). Additionally, whilst historically, the theoretical and empirical literature has provided a mixed argument for the specific relationship between fathers' parenting behaviours and adult anxiety, the present study contributes to the literature in that recalled negative parenting behaviours from fathers may be associated with greater report of adult anxiety, over and above that of mothers. This is in accordance with the recent meta-analysis conducted by Möller et al. (2016) who found that *child* anxiety symptoms were more strongly related to paternal than to maternal parenting, where more anxiety-enhancing fathering was associated with greater child anxiety.

An important consideration with respect to the interpretation of the current findings is that the age range of participants included in this sample varied from 17 to 56 years old. This meant that the period of time adults were asked to recall ranged from a minimum of 5 years for the youngest participants, up to 49 years. In an attempt to ensure that the effects obtained in this study were not a reflection of the length of recall required, we re-ran all analyses controlling for age, and also conducted analyses with an age restricted sample (17 to 19 years). As no differences in the pattern of results were obtained, it is not believed that length of recall impacted the current findings.

Overall, with respect to evaluating parental differences in CPB, the results of the present study suggest that mothers and fathers may be quite similar in their use of CPB. This finding is consistent with the conclusions drawn by Majdandžić et al. (2015), who found that despite some small mean level differences across subscales, mothers' and fathers' CPB was very similar towards young children (aged between 0-4 years). Whilst the theoretical literature has provided a strong argument for the relationship between fathers and CPB, and the results of the present study support this to some extent, the results of the present study also suggest that the continued investigation of the role of mothers' CPB towards child anxiety is warranted.

The results of the present study provide preliminary evidence regarding the aspects of CPB that are recalled by adults and additionally provide novel insight into this relationship towards anxiety in adults. However, the limitations of the study should be considered. First, the cross-sectional design of this study means that it is not possible to delineate cause and effect. For example, it could be that anxiety leads an adult to recall certain aspects of CPB but not others, or, as others have suggested, symptomology enables the distortion of some memories (Spokas & Heimberg, 2009). Second, these preliminary findings need to be considered within the context of sample demographics: undergraduate psychology students, the majority of which were female, further, no information regarding socio-economic status of participants was obtained, limiting the generalizability of results. Third, although the main focus of the present study was to develop greater understanding into the relationship between CPB experienced in childhood and whether these memories extend into adulthood, and the relationship of these recalled parenting characteristics on current anxiety, a limitation of this study was the reliance on adult retrospective report. Whilst this limitation was previously acknowledged, the results of the current study provide information regarding the parenting aspects of recalled CPB that remain salient for adults and highlight areas for further

investigation. As this is the first study to examine CPB retrospectively and from the perspective of the child rather than parent report, these results need to be replicated, preferably with multiple reporters (i.e., mothers and fathers), to enhance the validity of the construct. Finally, as previously mentioned, future research may wish to adjust items on the measure so that they can be interpreted in the way they were intended, (i.e. as a positive parenting behaviour), and try to capture elements of CPB that are hypothesised to be protective towards anxiety, such as the encouragement of safe risk taking, and rough-and-tumble play. Once these adjustments have been made, future research would benefit from confirming the underlying structure of recalled CPB via Confirmatory Factor Analysis and testing the relationship of this construct towards anxiety in independent samples. In addition, future studies may wish to incorporate analysis of the DASS depression subscale with the CPBQ-R in order to provide information pertaining to the cross-validation of this measure. Although these various limitations could not be addressed in the present study, they present varied and exciting avenues for future research.

The findings of the present study contribute to a growing body of research in the area of CPB by providing insight into the aspects of this parenting behaviour that are recalled into adulthood. These findings also highlight the importance of developing psychometrically sound and valid measurement tools prior to drawing strong conclusions about aspects of CPB that may or may not be important in anxiety aetiology. For example, whilst fathers' teasing was related to increased adult anxiety, this concept as it has evolved here does not describe CPB as it was intended. Thus, whilst there is a need to return to item-development to ensure that all aspects of CPB are captured adequately, this study provided a platform for this future work. This study also determined that there is continued need to explore the role of both mothers and fathers in this parenting domain.

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Table 2.1

EFA Pattern and Structure Coefficients of the CPBQ-R Mother and Father versions

Items	Social	Novelty	Teasing	h^2
My mother/father would encourage me to stand up for myself.	.87 (.89)/ .96 (.91)	-.02 (-.54)/ .07 (-.63)	.01 (.11)/ .01 (.23)	.79/ .83
My mother/father would encourage me to stick up for myself if others tried to walk over me.	.75 (.74)/ .82 (.80)	.04 (-.41)/ .04 (-.57)	.03 (-.11)/ .02 (.22)	.54/ .64
My mother/father would encourage me to stand up for my opinion.	.84 (.83)/ .78 (.82)	-.02(-.48)/ -.06 (-.63)	-.03 (.07)/ -.01 (.21)	.69/ .68
My mother/father would tell me to make the most of myself.	.69 (.71)/ .73 (.75)	.03 (-.43)/ -.02(-.56)	.02 (.10)/ .01 (.21)	.51/ .56
If I thought I couldn't do something, my mother/father would encourage me to try again.	.47 (.64)/ .49 (.71)	.29 (.56)/ -.31 (-.66)	-.06 (.02)/ -.05 (.17)	.46/ .55
If my mother/father saw something that was new or exciting to me, she/he would encourage me to approach it.	.27 (.56)/ .35 (.66)	-.47 (-.64)/ -.39 (-.67)	.03 (.11)/ .09 (.29)	.46/ .52
My mother/father would encourage me to gain new and exciting experiences by, for example, taking up a new hobby or sport.	.06 (.55)/ .04 (.66)	-.83 (-.86)/ -.85 (-.88)	.00 (.08)/ .01 (.27)	.75/ .77
My mother/father would encourage me to undertake new hobbies or activities where I would meet new people.	-.01 (.46)/ .02 (.62)	-.80 (-.79)/ -.83 (-.83)	.02 (.09)/ -.03 (.22)	.63/ .69
My mother/father would encourage me to take part in competitions and sporting events.	.06 (.46)/ -.00 (.54)	-.67 (-.71)/ -.71 (-.73)	.01 (.08)/ .07 (.27)	.51/ .54
My mother/father would regularly tease me for fun.	.08 (.03)/ .01 (.13)	.22 (.11)/ .13 (-.12)	.72 (.71)/ .84 (.80)	.53/ .66
My mother/father would sometimes play jokes on me	.04 (.17)/ .02 (.31)	.08 (.17)/ -.11 (-.36)	.70 (.71)/ .79 (.83)	.52/ .71
My mother/father would enjoy giving me a hard time by, for instance, making wisecracks.	-.03 (-.03)/ -.00 (.15)	.13 (.09)/ .06 (-.16)	.69(.68)/ .77 (.75)	.48/ .56
As a prank, my mother/father would sometimes give me a real scare.	-.00 (.15)/ -.03 (.17)	.12 (.18)/ -.01 (-.21)	.70 (.71)/ .74 (.74)	.52/ .54

At the swimming pool, my mother/father would sometimes push me into the water.	-.06 (.11)/ 02 (.30)	.19 (.20)/ -.16 (-.35)	.60 (.61)/ .60 (.65)	.39/ .45
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Note. Mother coefficients are presented first followed by father coefficients. Structure coefficients are in parentheses. Coefficients in bold load on factor. h^2 = communality coefficient. EFA = exploratory factor analysis; CPBQ-R = Challenging Parenting Behaviour Questionnaire: Retrospective version.

Table 2.2

Spearman's Rho Bivariate Correlations between continuous measures

Variable	1	2	3	4	5	6	7	8	9
1. SIAS	-	-	-	-	-	-	-	-	-
2. DASSas	.539** ^a	-	-	-	-	-	-	-	-
3. DASSss	.502** ^a	.768** ^a	-	-	-	-	-	-	-
4. Father Social	-.180** ^b	-.079 ^b	-.010 ^b	-	-	-	-	-	-
5. Father Teasing	.069 ^b	.205** ^b	.252** ^b	.217** ^d	-	-	-	-	-
6. Father Novelty	-.173** ^b	-.015 ^b	.027 ^b	.685** ^d	.296** ^d	-	-	-	-
7. Mother Social	-.173** ^c	-.053 ^c	-.038 ^c	.644** ^e	.159* ^e	.513** ^e	-	-	-
8. Mother Teasing	.053 ^c	.182** ^c	.144** ^c	.012 ^e	.448** ^e	.092 ^e	.101* ^f	-	-
9. Mother Novelty	-.260** ^c	-.057 ^c	-.032 ^c	-.199** ^e	.190** ^e	.594** ^e	.579** ^f	.082 ^f	-

Note. SIAS = Social Interaction Anxiety Scale; DASSas = Anxiety Subscale of the Depression Anxiety and Stress Scale; DASSss = Stress Subscale of the Depression Anxiety and Stress Scale.

* $p < .05$; ** $p < .01$. ^a $n = 383$. ^b $n = 347$. ^c $n = 377$. ^d $n = 348$. ^e $n = 342$. ^f $n = 380$.

Table 2.3

Hierarchical Multiple Regression Models Emerging Adult Anxiety Symptoms (DASSas).

Variable	<i>B</i> (95% CI)	β	sr^2
Block 1			
English	1.14 (.02, 2.27) [*]	.11	.01
Block 2			
English	1.10 (-.08, 2.28) ^a	.11	.01
Father Social	-.83 (-1.66, -.01) [*]	-.18	.01
Father Teasing	.82 (.31, 1.37) ^{**}	.21	.03
Father Novelty	.02 (-.64, .66)	.01	<.001
Mother Social	.66 (-.12, 1.40)	.13	.01
Mother Teasing	.47 (-.30, 1.29)	.08	<.01
Mother Novelty	-.16 (-.79, .60)	-.04	<.001

Note. Statistical significance: ^{**} $p < .01$. ^{*} $p < .05$. ^a $p = .067$.

Table 2.4

Hierarchical Multiple Regression Models Emerging Adult Anxiety (DASSss).

Variable	<i>B</i> (95% CI)	β	<i>sr</i> ²
Block 1			
English	-.08 (-1.26, 1.05)	-.01	<.001
Block 2			
English	-.12 (-1.28, 1.10)	-.01	<.001
Father Social	-.53 (-1.33, .26)	-.11	<.01
Father Teasing	1.08 (.54, 1.62)**	.25	.05
Father Novelty	.00 (-.93, .88)	-.00	<.001
Mother Social	.59 (-.21, 1.36)	.11	<.01
Mother Teasing	.23 (-.51, .95)	.04	<.01
Mother Novelty	-.34 (-1.11, .39)	-.07	<.01

Note. Statistical significance: ** $p < .01$.

Table 2.5

Hierarchical Multiple Regression Models Emerging Adult Social Anxiety (SIAS).

Variable	<i>B</i> (95% CI)	β	<i>sr</i> ²
Block 1			
English	3.82 (.03, 7.74) ^a	.11	.01
Block 2			
English	3.17 (-.72, 7.11)	.09	<.01
Father Social	-2.45 (-5.50, .61)	-.16	<.01
Father Teasing	1.69 (-.39, 3.78) ^b	.12	.01
Father Novelty	-.25 (-3.09, 2.48)	-.02	<.001
Mother Social	.72 (-2.42, 3.73)	.04	<.001
Mother Teasing	-.29 (-2.66, 2.51)	-.01	<.001
Mother Novelty	-2.26 (-4.87, .07) ^c	-.15	.01

Note. Statistical significance: ^a*p* = .051; ^b*p* = .052; ^c*p* = .053.

The next chapter (Chapter 3) presents the paper “The Relationship between Challenging Parenting Behaviour and Childhood Anxiety Disorders” published in the Journal of Anxiety Disorders (2016). Chapter 2 examined the relationship between recalled CPB and current adult anxiety, prompting the need to for future research to return to item development to ensure correct perception of items related to teasing in adult samples. Whilst Chapter 2 utilised a retrospective methodology to examine perceived parenting during childhood recalled by adult offspring, Chapter 3 examines the relationship between CPB and child anxiety concurrently, in families of preschool-aged children. Further, the study explores the relationship between CPB and child anxiety across symptom and diagnostic measures of anxiety, and includes the examination of parental anxiety towards CPB.

Chapter 3.

The Relationship between Challenging Parenting Behaviour and Childhood Anxiety Disorders

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Abstract

Background: This research investigates the relationship between challenging parenting behaviour and childhood anxiety disorders proposed by Bögels and Phares (2008).

Challenging parenting behaviour involves the playful encouragement of children to go beyond their own limits, and may decrease children's risk for anxiety (Bögels & Phares, 2008). *Method:* Parents ($n = 164$ mothers, 144 fathers) of 164 children aged between 3.4 and 4.8 years participated in the current study. A multi-method, multi-informant assessment of anxiety was used, incorporating data from diagnostic interviews as well as questionnaire measures. Parents completed self-report measures of their parenting behaviour ($n = 147$ mothers, 138 fathers) and anxiety ($n = 154$ mothers, 143 fathers). Mothers reported on their child's anxiety via questionnaire as well as diagnostic interview ($n = 156$ and 164 respectively). Of these children, 74 met criteria for an anxiety disorder and 90 did not.

Results: Fathers engaged in challenging parenting behaviour more often than mothers. Both mothers' and fathers' challenging parenting behaviour was associated with lower report of child anxiety symptoms. However, only mothers' challenging parenting behaviour was found to predict child clinical anxiety diagnosis. *Limitations:* Shared method variance from mothers confined the interpretation of these results. Moreover, due to study design, it is not possible to delineate cause and effect. *Conclusions:* The finding with respect to maternal challenging parenting behaviour was not anticipated, prompting replication of these results. Future research should investigate the role of challenging parenting behaviour by both caregivers as this may have implications for parenting interventions for anxious children.

Keywords: Anxiety Disorders, Challenging Parenting Behaviour, Fathers, Mothers.

Anxiety disorders are amongst the most common and debilitating forms of psychopathology experienced by children and adolescents, with a prevalence rate of approximately 5% (Rapee, 2012). Symptom onset often occurs in early childhood, sometimes as early as 2 to 3 years of age (Egger & Angold, 2006). Moreover, anxiety disorders are often chronic, persisting into adulthood (Merikangas et al., 2010). Growing recognition of the personal, social, and economic impact of anxiety disorders (Bodden, Dirksen, & Bögels, 2008; Zubrick, Silburn, Burton, & Blair, 2000), highlights the importance of research into their aetiology and maintenance (Bayer et al., 2011; Pahl, Barrett, & Gullo, 2012). A number of early risk factors for the development of anxiety disorders have been identified, including parenting factors and parental anxiety.

Current theory and research has emphasised the relationship between parenting factors and the development and maintenance of childhood anxiety disorders (Creswell, Murray, Stacey, & Cooper, 2011). Much of what is currently known about the influence of parenting on childhood anxiety disorders focuses on maternal overinvolved and overcontrolling parenting styles, and maternal anxiety (McLeod, Wood, & Weisz, 2007; Murray, Creswell, & Cooper, 2009; Rapee, Schniering, & Hudson, 2009). Maternal overinvolvement and control has been consistently linked with the development of childhood anxiety disorders (Hirshfeld, Biederman, Brody, Faraone, & Rosenbaum, 1997; Hudson & Rapee, 2001; Siqueland, Kendall, & Steinberg, 1996). Similarly, paternal overinvolvement and overcontrol have been associated with child anxiety (e.g. Greco & Morris, 2002; Hudson & Rapee, 2002), although existing studies show disparate and at times conflicting results. Such discrepancies remain difficult to resolve due to the overwhelming focus on the relationship between maternal parenting behaviours and childhood anxiety disorders and the limited number of studies examining fathers (Bögels & Phares, 2008; Phares & Compas, 1992).

Of the extant research conducted with fathers, most has focused on the father's role with respect to normal child development - ignoring the potential relationship between paternal behaviour and child psychopathology (Brennan, Hammen, Katz, & Le Brocque, 2002). An example for the direct role of the father, specifically for child social anxiety, comes from research by Bögels, Stevens, and Majdandžić (2011), which found that children with *high* social anxiety were more influenced by fathers' anxious reactions to ambiguous vignettes than mothers' reactions. That is, anxious children may put higher weight on fathers' responses than mothers' responses when faced with possible threat and deciding if a situation is dangerous and should be avoided (see Bögels et al., 2011). Considering that extant studies indicate poor psychological outcomes for children of anxious fathers, there is a clear and pressing need for further research in this area (Phares & Compas, 1992).

Bögels and Phares (2008) proposed a model that suggests fathers may have a particularly important influence over children's self-competence and anxiety prevention via challenging parenting behaviour. This concept of 'challenging parenting behaviour' has been coined to describe a style of parenting that can be both socio-emotional and physical (Majdandžić, Möller, de Vente, Bögels, & van den Boom, 2014). It can encompass play (particularly rough-and-tumble-play), and risk taking, and may also include teasing, giving the child a fright, encouraging assertiveness, and letting the child lose a game (Majdandžić, de Vente, & Bögels, 2010). Even though mothers may encourage behaviours such as risk taking, especially with their sons (Morrongiello & Dawber, 2000), studies have shown that fathers are less likely than mothers to intervene and stop children during risky activities (Fagot, Kronsberg, & MacGregor, 1985) and less likely to be overprotective (Grossmann, Grossmann, Fremmer-Bombik, Kindler, & Scheuerer-Englisch, 2002; Lindsey & Mize, 2001; Paquette & Bigras, 2010). According to Paquette (2004), a central component to father-child interactions is vigorous, physical play, termed 'Rough-and-Tumble' play. Paquette (2004)

argues that exposure to safe risk environments such as rough-and-tumble play, enables the child to be braver in unfamiliar situations as well as stand up for themselves, which in turn fosters the child's confidence. If exposure to safe risks such as rough-and-tumble play are beneficial for the child, Bögels and Phares (2008) hypothesise that if fathers do not encourage these interactions, the child is at risk of developing anxiety. Accumulating research in this area suggests that challenging parenting behaviour may buffer early separation, stranger, novelty and social anxiety (Bögels & Phares, 2008; Majdandžić et al., 2014).

One potential factor that may impact on the degree to which parents use challenging parenting behaviour is the parent's own psychopathology, in particular parental anxiety. Studies observing the parenting behaviour of anxious mothers in clinical (Whaley, Pinto, & Sigman, 1999) and community samples (Woodruff-Borden, Morrow, Bourland, & Cambron, 2002) have found that during interactions with their children, anxious mothers have been noted to grant their children less autonomy. Further, research by Turner and colleagues, (Turner, Beidel, Roberson-Nay, & Tervo, 2003) found that anxiety disordered parents were less likely to engage in physical play with their child than non-anxious parents. Bögels, Bamelis, and van der Bruggen (2008) suggest that if the father's role is to engage in challenging parenting behaviour such as rough-and-tumble play, paternal anxiety might interfere with such behaviour. Moreover, studies have shown that a past history of anxiety disorders can continue to have an effect on cognitions and parenting behaviours, even in the absence of a current disorder (Hollon, Kendall, & Lumry, 1986).

Although it has been suggested that fathers may be more likely than mothers to engage in challenging parenting behaviour, child gender may moderate this relationship. For example, some research has suggested that parents encourage more risk-taking behaviours in their sons compared to their daughters (Morrongiello & Dawber, 2000) and that fathers engage in more physical types of play with their sons compared with their daughters (Lindsey

& Mize, 2001). Given these findings, an investigation of the association between challenging parenting behaviour and anxiety should consider not only the gender of the parent but also the gender of the child.

There is currently only one parent-report measure for assessing challenging parenting behaviour, the Challenging Parenting Behaviour Questionnaire (CPBQ: Majdandžić et al., 2010). A recent study by Majdandžić and colleagues (2014) is, to our knowledge, the first to empirically investigate this broader concept of challenging parenting behaviour. In this study, maternal and paternal challenging parenting behaviour was measured via observation and their children's (aged 2 and 4 years respectively) *social* anxiety was observed at two time-points, 6 months apart. The results indicated that for the older preschool-aged children, paternal challenging parenting behaviour was associated with decreases in social anxiety, whereas maternal challenging behaviour was associated with an increase in child social anxiety. As this was the first study conducted in this area, it will be important to replicate these results as well as expand this concept to cover childhood anxiety at both symptom and disorder levels.

The current study extends these findings from Majdandžić and colleagues (2014), utilising a clinical measure of child anxiety and also a measure of parental anxiety to examine the association between mothers' and fathers' challenging parenting behaviour and child anxiety in preschool-aged children. The preschool years represent an optimum period to examine these associations as father-child interaction peaks at this age (Grossmann et al., 2002), and it is the time when early signs of anxiety may emerge (Egger & Angold, 2006). The purpose of the present study was therefore threefold: 1) to examine the association between challenging parenting behaviour and childhood anxiety disorders in both fathers and mothers; 2) to examine the association between parental anxiety and challenging parenting behaviour; and 3) to consider the potential effects of child gender on these relationships. In

line with these aims it was hypothesised that: (1) fathers will report more challenging parenting behaviour than mothers (2) parents who report higher levels of their own anxiety will report lower levels of challenging parenting behaviour; (3) parents will report higher levels of challenging parenting behaviour towards their male children compared to their female children; (4) children whose fathers report more challenging parenting behaviour will exhibit lower levels of anxiety (at both symptom and disorder levels) compared to those whose fathers report less challenging parenting behaviour; (5) Also of interest was to examine the relationship between mothers' challenging parenting behaviour and child anxiety (at both symptom and disorder levels). In addition, an exploratory analysis on the impact of child gender on the relationship between challenging parenting and child anxiety was conducted.

Method

Participants

Participants were 164 preschool children (92 girls and 72 boys) ranging in age from 3.4 to 4.8 years ($M = 3.97$ years, $SD = 3.9$), and their mothers ($n = 164$) and fathers ($n = 144$). Children were recruited via advertisements in a local parenting magazine and flyers distributed to local preschools as part of a randomised control trial (RCT) of an intervention for behaviourally inhibited children. The current study was conducted as part of baseline assessments for the RCT. Two different advertisements were used, the first requested for 'shy' children, the second for 'confident' children. Mothers completed the Approach subscale of the Short Temperament Scale for Children via telephone as a screening questionnaire (STSC; Sanson, Smart, Prior, Oberklaid, & Pedlow, 1994). The STSC is an abbreviated version of the Childhood Temperament Questionnaire (Sanson et al., 1994) and has been shown to have adequate validity, good reliability and internal consistency (Sanson, Prior, Garino, Oberklaid, & Sewell, 1987). Children who score low on the Approach subscale after

approximately 3 years of age have a greater than twofold chance of showing anxiety problems in adolescence (Prior, Smart, Sanson, & Oberklaid, 2000). High test-retest reliability for the Approach scale has been demonstrated in previous studies ($r = .90$) (Sanson et al., 1987). In the current sample, internal consistency was excellent ($\alpha = .92$). Only children with scores one standard deviation above or below the normative mean on the Approach scale were invited to participate in the study and were classified as behaviourally inhibited (BI, $n = 85$) or behaviourally uninhibited (BUI, $n = 79$). Of the BI children, 69 met criteria for an anxiety disorder (AD), using the ADIS-P-IV (see below) and five BUI children also met criteria for an anxiety disorder. These 74 children (45.1%; 41 girls and 33 boys) were included in the AD group. The remaining 90 children (54.9%; 51 girls and 39 boys) who did not meet criteria for an anxiety disorder were included in the Non-AD group.

Participants predominantly identified as being of Oceanic ethnicity (69.5%), 14.6% as Asian, 6.1% European, and 2.4% American, 69.5% were from middle to high income families (annual income of \$80,000 or greater) and 90.2% of children were from two-parent homes. Mothers were aged between 24 and 47 years ($M = 36.59$ years, $SD = 4.63$) and fathers between 24 and 61 years ($M = 39.01$ years, $SD = 5.18$).

Measures

Child anxiety disorders. The Anxiety Disorders Interview Schedule for *DSM-IV* Parent Version (ADIS-P-IV; Silverman & Albano, 1996) was used with mothers ($n = 164$) to assess child anxiety. Items referring to school were changed to 'preschool'. Interviews were conducted and diagnoses assigned by postgraduate students in psychology trained by the last author. The ADIS-P-IV has excellent interrater agreement of kappa = 1.00 for an overall anxiety diagnosis and between kappa = .80 and kappa = .93 for specific anxiety diagnoses (Lyneham, Abbott, & Rapee, 2007). Reliability for the presence of a clinical anxiety disorder in the current sample was excellent (kappa = .95). Diagnoses were only considered 'clinical'

if the severity rating was four or greater, consistent with ADIS guidelines (Silverman & Albano, 1996).

Child anxiety symptoms. Mothers ($n = 157$) completed the Preschool Anxiety Scale (PAS; Spence, Rapee, McDonald, & Ingram, 2001) to gain a general overall measure of child anxiety in the present sample. The PAS contains 28 items reflecting areas broadly consistent with DSM-IV diagnostic categories; social phobia, separation anxiety, generalized anxiety, obsessive-compulsive disorder, and fears of physical injury. The PAS has been found to have good construct validity, satisfactory internal consistency, and good test-retest reliability (Spence et al., 2001). In the present study, internal consistency for the PAS total score was excellent ($\alpha = .94$).

Parent anxiety symptoms. The Depression Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was administered to both mothers ($n = 155$) and fathers ($n = 144$) in order to gain a measure of parental anxiety. The DASS-21 is a quantitative measure of depression, anxiety, and stress and is a widely used measure of adult anxiety (Osman et al., 2012). It has good factor structure, concurrent validity and internal consistency, with Cronbach's alphas for the subscales found at .94 for Depression, .87 for Anxiety, and .91 for Stress (Antony, Bieling, Cox, Enns, & Swinson, 1998). In the present study, the Cronbach's alpha for the anxiety scale was acceptable ($\alpha = .69$) for both mothers and fathers.

Challenging parenting behaviour. Mothers ($n = 148$) and fathers ($n = 139$) completed the Challenging Parenting Behaviour Questionnaire (CPBQ; Majdandžić et al., 2010), 4-6-year-old version. The CPBQ4-6 is a 43-item parent-report scale that assesses challenging behaviour through parents' encouragement of: risk taking, rough-and-tumble play, assertiveness, competition, social daringness, and teasing the child. A total score is constructed for an overall measure of challenging parenting behaviour. Parents were asked to rate statements about interactions with their child (e.g., 'If my child thinks that he/she can't

do something, I encourage him/her to try again') on a 5-point Likert scale (1= *Not Applicable*, 5= *Completely Applicable*). Six items were reverse scored. This is a newly developed measure and as yet no psychometric papers have been published on its reliability and validity, however, the psychometric properties of the younger age versions of this questionnaire (i.e., 4 months, 1 year and 2.5 years), have been found to be good (Majdandžić, de Vente, & Bögels, 2015). The Cronbach's alpha for the total Challenging Parenting Behaviour score was good ($\alpha = .86$).

Procedure

Macquarie University Ethics Committee approved all procedures prior to commencement. Mothers provided written consent for themselves and their child to participate in the ongoing study and were sent links to online questionnaires for themselves and the child's father. For mothers, questionnaires included demographic information, the DASS-21, the CPBQ and the PAS. For fathers, questionnaires included demographic information, the DASS-21, and the CPBQ. ADIS-IV-P interviews were conducted with mothers during a 2-hour research session at Macquarie University. Families of BI children were reimbursed \$100 for their time² and were offered an intervention-parenting program at the Centre for Emotional Health, Macquarie University. Families of BUI children were reimbursed \$50 for attending one research session. Participants also completed additional questionnaires as well as observational tasks that are not presented here. It is noted that fathers were not requested to complete measures pertaining to childhood anxiety (PAS and ADIS-IV-P). As fathers were not required to attend the research session, questionnaire packages were restricted to reduce time constraints for fathers and to facilitate survey completion. Data for the current study pertains to the first research session and baseline questionnaires for the RCT.

² These families were required to participate in three research sessions at Macquarie University and were offered five 1-hour sessions of a parenting intervention as part of a RCT.

Data Preparation

All variables were checked for conformity to the assumption of normal distribution. Distributions for mother-report PAS total scores and mother and father report DASS- anxiety scores were positively skewed and contained multiple outliers so correction was attempted using square-root transformation. The transformed variables continued to violate the Kolmogorov-Smirnov and Shapiro-Wilk statistics. However, inspection of the respective histograms indicated improvements in skewness and kurtosis, with kurtosis values ranging between -1.10 and -.94, and skewness values ranging between -.12 and .30. Further, the square-root transformation removed any outliers. Consequently, transformed variables were used for all analyses.

Due to missed responses or the unavailability of mothers and fathers to complete online questionnaires, there was a small amount of missing data. Analyses were conducted with all available data, the number in brackets shows the number of cases with complete data for each variable: Mother-report PAS total scores (156), child diagnostic group (164), mother DASS anxiety total score (154), mother CPBQ total score (147), father DASS anxiety total score (143) and father CPBQ total score (138). A significance level of 0.05 was set for all analyses.

Data Analysis Plan

To examine whether fathers reported more challenging parenting behaviour than mothers (hypothesis 1), a paired-samples *t*-test was conducted. The relationship between parental anxiety and challenging parenting behaviour (hypothesis 2) was examined through hierarchical multiple regression analyses (MRA), whilst controlling for potential covariates (e.g. parental age). The hypothesis (3), that parents would report higher levels of challenging parenting behaviour for their male children compared to their female children, was examined via independent samples *t*-test.

To examine the association between challenging parenting behaviour and child anxiety (hypotheses 4 and 5), and whether child gender moderates this association, two dependent variables were examined across a series of regression analyses. Both dependent variables were measures of child anxiety: mother report of child anxiety symptoms on the PAS (a continuous measure); presence of an anxiety diagnosis based on the ADIS-IV-P (a dichotomous variable - anxiety group). For child anxiety symptoms, hierarchical MRA was used. For anxiety group, logistic regression was used. Of primary interest were the main effects of challenging parenting behaviour and child gender on child anxiety, as well as the interaction between child gender and challenging parenting behaviour.

Results

Preliminary Analyses

Means, standard deviations, and number of participants for demographic and predictor variables split by anxiety group (AD/Non-AD) are shown in Table 1. Chi-square analyses were conducted to examine differences between anxiety groups (AD/Non-AD) on demographic variables. There were no significant differences between anxiety groups on child age, maternal and paternal age, marital status, family income or ethnicity. A series of one-way between groups analyses of variance (ANOVAs) were conducted, examining the relationship between demographic variables and all continuous measures relating to child anxiety (PAS total score), challenging behaviour (father and mother CPBQ total scores), and parent anxiety (father and mother total DASS anxiety scores), none were significant (all p 's $>.05$).

Table 2 shows the bivariate correlations amongst all continuous measures. A positive, medium sized correlation was found between mothers' and fathers' challenging parenting behaviour. The magnitude of the remaining correlations is small, but several significant associations were found. In contrast with expectations, an association between paternal

anxiety and challenging parenting behaviour was not apparent ($p > .05$). Similarly, mothers' anxiety and challenging parenting behaviour were not associated ($p > .05$). Mothers' report of child anxiety symptoms on the PAS had significant weak negative associations with both maternal and paternal challenging parenting behaviour; higher scores on the respective CPBQ scores were associated with lower maternal report of child anxiety symptoms on the PAS.

Hypothesis Analyses

Maternal and paternal challenging parenting behaviour. A paired-samples *t*-test was conducted to compare mothers' and fathers' challenging parenting behaviour scores. As expected, fathers reported significantly more challenging parenting behaviour ($M = 3.32$, $SD = .51$), than mothers ($M = 3.20$, $SD = .49$), $t(132) = -2.58$, $p = .01$, with a small effect, $d = .24$.

Parental anxiety and challenging parenting behaviour. As the correlation (see Table 2) between maternal and paternal challenging parenting behaviour was significant with a moderate effect, separate regression models were created for mothers and fathers. For each analysis variables were entered in the following order: 1) Parent Age, and 2) Parent DASS anxiety score. Prior to conducting a hierarchical MRA, relevant assumptions were tested. As mentioned, distributions for mother and father anxiety scores (DASS) were not normally distributed, analyses conducted with transformed variables are reported. All remaining assumptions for the MRA were met.

For Model 1, fathers' age was entered at Step 1 and accounted for a non-significant 0.9% of the variance in fathers' challenging parenting behaviour, $F(1,134) = 1.21$, $p = .274$. On Step 2, father DASS anxiety was added to the model, accounting for an additional 2.2% of the variance in fathers' challenging parenting behaviour and was non-significant ($\Delta R^2 = .022$, $\Delta F(1,133) = 2.96$, $p = .088$).

For Model 2, examining maternal anxiety and challenging parenting behaviour, mothers' age was entered at Step 1 and accounted for a non-significant 1.6% of the variance

in mothers' challenging parenting behaviour, $F(1,145) = 2.39, p = .124$. On Step 2, mother DASS anxiety was added accounting for an additional 0.8% of the variance in mothers' challenging parenting behaviour and was non-significant ($\Delta R^2 = .008, \Delta F(1,144) = 1.14, p = .288$).

Unstandardised (B) and standardised (β) regression coefficients, and squared semi-partial correlations (sr^2) for each predictor in these regression models are reported in Table 3.

Challenging parenting behaviour and child gender. Independent samples t -tests were used to compare mothers' and fathers' challenging parenting behaviour towards their male and female children. There was no significant difference between mothers' challenging parenting behaviour towards male ($M = 3.14, SD = .52$) and female ($M = 3.10, SD = .47$) children, $t(145) = .44, p = .66$. Likewise, fathers' challenging parenting behaviour did not differ significantly between male ($M = 3.26, SD = .53$) and female ($M = 3.18, SD = .50$) children, $t(135) = .83, p = .41$.

Maternal and paternal challenging parenting behaviour and child anxiety. As noted previously, separate regression models were created for mothers and fathers. For each analysis variables were entered in the following order: 1) Challenging Parenting Behaviour, 2) Child Gender and 3) the interaction between Challenging Parenting Behaviour and Child Gender. Interaction terms were calculated by multiplying mean-centred independent variables.

Child anxiety symptoms. Prior to conducting a hierarchical MRA, relevant assumptions were tested. As mentioned, distributions for mother-report PAS were not normally distributed, analyses conducted with transformed variables are reported. All remaining assumptions for the MRA were met.

For Model 1, fathers' challenging parenting behaviour was entered at Step 1 and contributed significantly to the regression model, $F(1,134) = 5.53, p = .02$, accounting for

4% of the variance in child anxiety symptoms. On Step 2 child gender was added accounting for no additional variance in child anxiety symptoms and was non-significant ($\Delta R^2 = .00$, $\Delta F(1,133) = .01$, $p = .72$). A similar result was found when adding Step 3, the interaction between fathers' challenging parenting behaviour and child gender ($\Delta R^2 = .00$, $\Delta F(1,132) = .01$, $p = .90$).

For Model 2, examining maternal challenging parenting behaviour, on Step 1 of the hierarchical MRA, mothers' challenging parenting behaviour contributed significantly to the regression model, $F(1,145) = 9.21$, $p = .003$, accounting for a significant 6% of the variance in child anxiety symptoms. Similar to the hierarchical MRA for fathers, both Steps 2 and 3 contained non-significant predictors and contributed no additional variance in child anxiety symptoms (child gender; $\Delta R^2 = .00$, $\Delta F(1,144) = .15$, $p = .70$, mother challenging parenting behaviour and child gender interaction; $\Delta R^2 = .00$, $\Delta F(1,143) = .16$, $p = .69$).

Unstandardised (B) and standardised (β) regression coefficients, and squared semi-partial correlations (sr^2) for each predictor in these regression models are reported in Table 4.

Presence of child clinical anxiety diagnosis. Despite attempts at model reduction, the logistic regression model assessing fathers' challenging parenting behaviour on child anxiety diagnosis failed to reach statistical significance ($p > .05$), indicating that the model was unable to distinguish between children with and without an anxiety diagnosis. Full data for this logistic regression model is reported in Table 5.

For mothers, Step 1 of the model was statistically significant, $\chi^2(1, N = 147) = 5.93$, $p = .015$ (see Table 6). Thus, the initial model, containing mothers' challenging parenting behaviour as a predictor variable, was able to distinguish between children with and without an anxiety diagnosis. Once child gender and the interaction between child gender and mothers' challenging parenting behaviour were introduced in Steps 2 and 3, the overall

model became non-significant and neither predictor contributed significantly to the model ($p > .05$).

Discussion

The purpose of the present study was threefold: to examine the association between challenging parenting behaviour and childhood anxiety in both fathers *and* mothers; to examine the relationship between parent anxiety and challenging parenting behaviour; and additionally, to consider the potential effects of child gender on these relationships. Overall, the findings showed that fathers reported more challenging parenting behaviour than mothers. For fathers, challenging parenting behaviour was associated with lower report of child anxiety, although only at the symptom level. For mothers, significant relationships were found between challenging parenting behaviour and child anxiety at both symptom *and* diagnostic levels; more challenging parenting behaviour was associated with less child anxiety. Contrary to expectations, no significant association was found between parents' anxiety and challenging parenting behaviour. Additionally, child gender did not moderate the association between challenging parenting behaviour and children's anxiety.

The finding that fathers reported significantly greater challenging parenting behaviour than mothers is consistent with the theoretical literature reviewed earlier, which proposes that one of the important parenting roles for fathers is to engage in challenging parenting behaviour (Bögels & Perotti, 2011; Bögels & Phares, 2008; Möller, Majdandžić, de Vente, & Bögels, 2013; Paquette, 2004). Our results suggest that, *at the preschool age*, fathers engage in more challenging parenting behaviour than mothers. This finding is consistent with previous studies which demonstrated that fathers' interactions with their preschool-aged children are often more physical, boisterous, and unpredictable than mothers' interactions (MacDonald & Parke, 1986; Paquette, 2004).

A key finding of the current study was that higher paternal challenging behaviour was associated with lower report of child anxiety symptoms. This is consistent with the theoretical model proposed by Bögels and Phares (2008), as well as Majdandžić and colleagues' recent empirical study (Majdandžić et al., 2014). However, the logistic regression analysis demonstrated that fathers' challenging parenting behaviour did not predict child anxiety at the diagnostic level (Table 5). Although this result may appear inconsistent with the hypothesis and the theoretical model proposed by Bögels and Phares (2008), perhaps fathers' challenging parenting behaviour is more influential at the symptomatic level of child anxiety and is not a strong enough characteristic alone to discriminate between children with an anxiety diagnosis and those without. Further, as this is the first study to use a diagnostic tool for the assessment of child anxiety, as opposed to observational and parent report (see Majdandžić et al., 2014), the relationship between this parenting behaviour and child anxiety diagnosis needs to be replicated in future studies, and across measurement methods. Additionally, for the purposes of this study, challenging parenting behaviour was measured by the total score on the CPBQ (Majdandžić et al., 2010) and thus as a broad construct. It may be that sub-domains of this measure, for example rough-and-tumble play or risk-taking, may be a better indication of fathers' challenging behaviour, and more specifically affect child anxiety (Bögels & Phares, 2008).

Whilst the theoretical literature has provided a strong argument for a relationship between fathers and challenging parenting behaviour, the present study explores the important question of whether mothers' challenging parenting behaviour may also play a role towards child anxiety. The results provide support for this relationship, as mothers' challenging parenting behaviour was found to have a small yet significant negative association with child anxiety at both symptom and disorder level. This finding was not anticipated, as it seems to contrast that reported by Majdandžić et al. (2014) who found that

observed maternal challenging parenting behaviour longitudinally increased observed social anxiety in their sample of 4-year-old children, over a period of six months. A potential explanation for these disparate findings may be that the studies used different measures to assess challenging parenting behaviour. While the present study used a newly developed questionnaire, yet to be psychometrically evaluated, the reliability of the measure was excellent. In contrast, the observations used in the study of Majdandžić et al. (2014) assessed challenging parenting behaviour in a small set of structured tasks, such as making a puzzle, which may have been less optimal to assess all aspects (including physical ones) of this broad construct. Alternatively, parental perception of challenging behaviour may be subject to social desirability or other biases, which may be gender specific. Certainly, the comparison of observational and self-report measures of challenging parenting behaviour is warranted in future research. Another explanation for the different findings between our study and that of Majdandžić et al. (2014) with respect to maternal challenging behaviour, is that their study investigated the effect of parental challenging behaviour on the increase of child anxiety, thus looking at consequential effects, whereas we studied the cross-sectional association. Perhaps mothers' challenging behaviour is more influenced by the anxiety of the child than fathers, and fathers' challenging behaviour may have a different effect on the child than mothers' challenging behaviour. Due to the strong theoretical argument for the role of fathers in this domain, this finding for mothers presents an exciting area for future research. Perhaps it is not surprising that mothers' challenging parenting behaviour was found to relate to child anxiety; mothers typically spend more time with their children than fathers, especially at this younger age (for a review, see Möller et al., 2013). Consequently, this may provide ample time for this parenting behaviour to affect child anxiety. Nevertheless, findings of this association for both caregivers lend support to the argument that parental engagement in challenging parenting behaviour, including rough-and-tumble play, encouraging children to

step out of their comfort zone and take risks, presents an important parenting domain warranting further investigation.

It has been suggested that if a parent is anxious they may be less likely to engage in behaviour they find challenging or scary or may prevent their children from engaging in situations with an element of risk, interfering with their ability to engage in challenging parenting behaviour with their children (Bögels et al., 2008). The findings of this study gave no indication that parental anxiety impacted challenging parenting behaviour. As, to the authors' knowledge, this is the first study to empirically test this relationship; further research is required before conclusions can be drawn. However, given that the presence of parental anxiety has been hypothesised to exacerbate other parenting behaviours, such as overprotection (Hudson & Rapee, 2001), it is encouraging that challenging parenting behaviour may be relatively stable in the presence of parental psychopathology.

Alternatively, it may be that challenging parenting behaviour may differ only for parents with clinical levels of anxiety. In the current study the representation of parents reporting elevated anxiety may not have been high enough to detect this relationship. In fact, only 14.1% of parents in the present sample had a total DASS anxiety score above the population mean of 4.7 (as per the DASS manual; Lovibond & Lovibond, 1995). Consequently, it remains possible that parental anxiety may impact the relationship towards challenging parenting behaviour however this may not have been captured using the community sample recruited for the present study.

In addition to these primary hypotheses, the impact of child gender on challenging parenting behaviour was also explored. It was anticipated that mothers, and especially fathers, would be more likely to engage in challenging parenting behaviour with their sons, such as encouraging risk-taking and rough-and-tumble play, than with their daughters. Although both mothers and fathers reported challenging their male children more than their

female children, this difference was not significant. Further, when child gender was added into father and mother regression models there were no significant effects of child gender or significant interactions. Despite some literature indicating that child gender influences parenting interactions (Lindsey & Mize, 2001; Morrongiello & Dawber, 2000), the pattern of findings reported in the current study is in keeping with the results of a meta-analysis showing non-significant or small effect sizes for parents' differential socialization of boy and girls (Lytton & Romney, 1991). Based on these findings it may be interpreted that Australian parents are moderately egalitarian in their engagement with challenging parenting behaviour for male and female children. To confirm this, it may be required to compare challenging parenting behaviour of both caregivers in families with male and female children.

The results of the present study provide important evidence regarding the relationship between fathers' challenging parenting behaviour and childhood anxiety and additionally provide novel insight into this relationship for mothers. However, the limitations of the study should be considered. First, the cross-sectional design of this study means that it is not possible to delineate cause and effect. For example, it could be that parenting a child expressing symptoms of anxiety leads a parent to inhibit the amount of challenging behaviour they engage in with their child. Second, although the main focus of this present study was on the father-child relationship, a limitation in interpreting the current findings is the shared method variance from mothers. As mentioned, this study was part of a larger RCT, where additional maternal characteristics were of interest. Consequently, diagnostic interviews and surveys regarding child anxiety were conducted solely with the child's mother. As this is the first study to display these findings for mothers, these results need to be replicated, and with different modes of measurement so as to explore the mechanisms that might drive this association for mothers. For example, both mothers and fathers could report on their child's anxiety. Further, mothers could report on their own, as well as fathers' challenging parenting

behaviour and vice versa (Bögels & van Melick, 2004). Finally, as previously mentioned, a comparison between observational as opposed to self-report measurement for challenging parenting behaviour is required and future research may wish to explore the specific sub-types of challenging parenting behaviour (e.g. rough-and-tumble play, risk-taking) which may be of greater relevance for fathers. Although these various limitations could not be addressed in the present study, they present varied and exciting avenues for future research.

The findings provide promising evidence that both paternal and maternal challenging behaviour may hold a protective relationship towards child anxiety. More broadly, this research also addresses a call in recent years for greater attention to the role of the father in the aetiology, maintenance, and prevention of child anxiety disorders (Bögels & Phares, 2008). The findings of the current study have implications not only for research but also for the development of interventions for anxious children and their parents. In a recent study, parents of anxious children identified concerns regarding whether they should challenge their children's behaviour and to what extent (Hiebert-Murphy et al., 2012). Continuing research in this area may provide valuable feedback for parents about optimal parenting strategies in the face of child anxiety. Additionally, these findings may have implications for cognitive behavioural treatments with anxious children. For example, a parent may be more willing to encourage and model brave behaviour to their child, especially during exposure sessions, if there is sound empirical rationale for this behaviour.

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Table 3.1

Descriptive Statistics for Demographic and Predictor Variables Split by Anxiety Group

	AD (<i>n</i> = 74)	Non-AD (<i>n</i> = 90)
Demographics		
Child Age in Months	<i>M</i> = 48.15 (<i>SD</i> = 4.09)	<i>M</i> = 47.32 (<i>SD</i> = 3.76)
Child Gender (percentage female)	55%	57%
Mother Age in Years	<i>M</i> = 35.71 (<i>SD</i> = 4.54)	<i>M</i> = 37.34 (<i>SD</i> = 4.61)
Father Age in Years	<i>M</i> = 38.15 (<i>SD</i> = 4.69)	<i>M</i> = 39.73 (<i>SD</i> = 5.48)
Gross Family Income (percentage of group)		
\$1 - \$19,000	4.1%	0%
\$20,000 - \$39,000	4.1%	5.7%
\$40,000 - \$79,000	21.6%	19.5%
\$80,000 +	68.9%	72.4%
Missing	1.3%	2.4%
Ethnicity		
Oceanic	60.8%	76.7%
European	6.7%	5.5%
Asian	24.3%	6.7%
American	2.7%	2.2%
Missing	5.5%	8.9%
Predictor Variables		
PAS Total Score	<i>M</i> = 42.53 (<i>SD</i> = 15.29)	<i>M</i> = 12.16 (<i>SD</i> = 12.16)
Mother CPBQ Total Score	<i>M</i> = 3.10 (<i>SD</i> = 0.50)	<i>M</i> = 3.30 (<i>SD</i> = 0.46)
Father CPBQ Total Score	<i>M</i> = 3.24 (<i>SD</i> = 0.50)	<i>M</i> = 3.38 (<i>SD</i> = 0.51)
Mother DASS Anxiety Score	<i>M</i> = 2.92 (<i>SD</i> = 2.49)	<i>M</i> = 1.64 (<i>SD</i> = 2.02)
Father DASS Anxiety Score	<i>M</i> = 1.76 (<i>SD</i> = 2.01)	<i>M</i> = 1.58 (<i>SD</i> = 2.25)

Note. DASS = Depression Anxiety Stress Scales, PAS = Preschool Anxiety Scale, CPBQ = Challenging Parenting Behaviour Questionnaire.

Table 3.2

Bivariate Correlations between Continuous Measures

Variable	Mother Anxiety (DASS)	Father Anxiety (DASS)	Child Anxiety (PAS)	Mother CPBQ
Mother Anxiety (DASS)	-	-	-	-
Father Anxiety (DASS)	.07	-	-	-
Child Anxiety (PAS)	.29**	.15	-	-
Mother CPBQ	-.08	.07	-.23**	-
Father CPBQ	.06	-.12	-.18*	.44**

Note. Statistical significance: ** $p < .01$. * $p < .05$. DASS = Depression Anxiety Stress Scales, PAS = Preschool Anxiety Scale, CPBQ = Challenging Parenting Behaviour Questionnaire.

Table 3.3

Hierarchical Multiple Regression Models Predicting Challenging Parenting Behaviour.

Variable	<i>B</i> (95% CI)	β	<i>sr</i> ²
Model 1			
Step 1			
Father Age	.01 (-.01, .03)	.09	.00
Step 2			
Father Age	.01 (-.01, .02)	.09	.00
Father DASS	-.09 (-.19, .01)	-.15	.02
Model 2			
Step 1			
Mother Age	-.01 (-.03, .00)	-.13	.02
Step 2			
Mother Age	-.01 (-.03, .00)	-.14	.02
Mother DASS	-.05 (-.14, .04)	-.09	.00

Note. DASS = Depression Anxiety Stress Scale (DASS-21; Anxiety Scale)

Table 3.4

Hierarchical Multiple Regression Models Predicting Child Anxiety Symptoms.

Variable	<i>B</i> (95% CI)	β	<i>sr</i> ²
Model 1			
Step 1			
Father CPBQ	-.84 (-1.55, -.13) *	-.20	.04
Step 2			
Father CPBQ	-.84 (-1.55, -.13) *	-.20	.04
Child Gender	-.04 (-.76, .68)	-.01	<.001
Step 3			
Father CPBQ	-1.25 (-3.57, 1.07)	-.30	.01
Child Gender	-.05 (-.77, .68)	-.01	<.001
Father CPBQ x Child Gender	.26 (-1.17, 1.70)	.10	<.001
Model 2			
Step 1			
Mother CPBQ	-1.09 (-1.81, -.38) **	-.24	.06
Step 2			
Mother CPBQ	-1.10 (-1.82, -.38) *	-.25	.06
Child Gender	-.14 (-.83, .56)	-.03	<.001
Step 3			
Mother CPBQ	-1.54 (-3.81, .73)	-.34	.01
Child Gender	-.14 (-.84, .56)	-.03	<.001
Mother CPBQ x Child Gender	.29 (-1.14, 1.73)	.10	<.001

Note. CPBQ = Challenging Parenting Behaviour Questionnaire. Statistical significance: ** $p < .01$. * $p < .05$

Table 3.5

Logistic Regression with Paternal Variables Predicting Child Clinical Anxiety Diagnosis.

Variable	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Odds Ratio</i>	<i>95% C.I. for Odds Ratio</i>	
							<i>Lower</i>	<i>Upper</i>
Step 1								
Father CPBQ	-.59	.35	2.91	1	.088	.55	.28	1.093
Constant	-.21	.17	1.44	1	.230	.81		
Step 2								
Father CPBQ	-1.67	.35	3.01	1	.083	.54	.27	1.08
Child Gender	-.14	.35	.18	1	.670	.86	.44	1.71
Constant	.02	.56	.00	1	.973	1.02		
Step 3								
Father CPBQ	-1.67	1.18	2.02	1	.155	.19	.02	1.89
Child Gender	-.14	.35	.17	1	.678	.86	.44	1.72
Father CPBQ x Child Gender	.68	.71	.92	1	.338	1.98	.49	8.05
Constant	.03	.56	.00	1	.959	1.03		

Note. CPBQ = Challenging Parenting Behaviour Questionnaire. *N* = 138.

Table 3.6

Logistic Regression with Maternal Variables Predicting Child Clinical Anxiety Diagnosis.

Variable	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Odds Ratio</i>	<i>95% C.I. for Odds Ratio</i>	
							<i>Lower</i>	<i>Upper</i>
Step 1								
Mother CPBQ	-.84	.36	5.66	1	.017*	.43	.21	.86
Constant	-.18	.17	1.20	1	.274	.83		
Step 2								
Mother CPBQ	-.86	.36	5.76	1	.016*	.43	.21	.85
Child Gender	-.16	.34	.21	1	.647	.86	.44	1.66
Constant	.05	.55	.02	1	.921	1.06		
Step 3								
Mother CPBQ	-.76	1.12	.46	1	.500	.47	.05	4.25
Child Gender	-.16	.34	.21	1	.645	.85	.44	1.66
Mother CPBQ x Child Gender	-.06	.71	.01	1	.928	.94	.23	3.79
Constant	.05	.55	.01	1	.920	1.06		

Note. CPBQ = Challenging Parenting Behaviour Questionnaire. *N* = 147. Statistical significance: * *p* < .05.

The next paper “Fathers’ Challenging Parenting Behaviours and Anxiety towards Childhood Anxiety Disorders: A Novel Computerised Task” continues to examine the relationship between CPB and anxiety in preschool-aged children, through the development of a new measure for assessing this behaviour. Chapter 3 included the examination of CPB with both fathers and mothers, and provided novel insight into this behaviour for mothers. The investigation of CPB of both mothers and fathers is continued in Chapter 5 of this thesis. However, in the current Chapter we chose to focus explicitly on the role of fathers. There were several motivations for this decision. First, this study was tailored in accordance with the broader scope of this thesis with the desire to contribute to a small but growing body of research examining the relationship between fathers’ parenting behaviours and childhood anxiety. Second, this task was developed as a potential method to examine fathers’ parenting without requiring attendance at an onsite laboratory. Building upon the conclusions of Chapter 3, we examined CPB at the sub-domain level; including domains such as paternal risk-taking and rough-and-tumble play. Like Chapter 3, we continued to examine the impact of paternal anxiety towards CPB. In contrast to the previous studies of this thesis, the relationship between fathers’ CPB and the temperament style of behavioural inhibition (BI), an identified precursor to anxiety, was examined.

Chapter 4.

Fathers' Challenging Parenting Behaviour and Anxiety towards Childhood Anxiety

Disorders: A Novel Computerised Task

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Abstract

Challenging parenting behaviour involves the playful encouragement of children to go beyond their own limits, and may decrease children's risk for anxiety (Bögels & Phares, 2008). This research investigates the relationship between fathers' challenging parenting behaviour, childhood anxiety disorders, behavioural inhibition, and children's participation in a risk-taking task. This study also examines the relationship between paternal anxiety and challenging parenting behaviour. The sample included 67 preschool-aged children (28 children met criteria for an anxiety disorder) and their parents ($n = 134$). A multi-method assessment was used incorporating data from diagnostic interviews and questionnaire measures, as well as behavioural measures of paternal challenging behaviour and child risk-taking, which was examined using a novel computerised task. The results provided some initial support for the negative relationship between fathers' challenging parenting behaviour and child anxiety, through the domain of rough-and-tumble play. However the remaining associations between fathers' challenging parenting behaviour and child anxiety were not statistically significant. Children were found to take more risk on the novel computer task when playing with their father compared to when playing alone. No support was found for relationships between behavioural inhibition and paternal anxiety with challenging parenting behaviour. Several children with anxiety disorders declined to participate in the child-alone version of the computer task reducing the sample size for this group. This study adds to a growing body of literature exploring the relationship between paternal challenging behaviour and the role of the father in the aetiology, maintenance, and prevention of child anxiety disorders (Bögels & Phares, 2008).

Keywords: Fathers; Challenging Parenting Behaviour; Paternal Anxiety; Childhood Anxiety Disorders.

Anxiety disorders represent one of the most common mental health disorders in children and adolescents (Lonigan, Phillips, Wilson, & Allan, 2011), with the preschool years being a time when the earliest symptoms of anxiety may emerge (Egger & Angold, 2006). Parenting behaviours encompassing greater rejection and control have been associated with increased risk for anxiety with meta-analyses suggesting parenting may account for approximately 4% of the variance in childhood anxiety disorders (McLeod, Wood, & Weisz, 2007). Literature to date has largely focussed towards maternal characteristics, resulting in a paucity of research involving fathers and the impact of fathers' parenting on childhood anxiety (Phares, 1992).

To address this, studies have begun to examine the role of fathers in childhood anxiety disorders. Recently, Möller, Nikolić, Majdandžić, and Bögels (2016) conducted two meta-analyses for mothers' and fathers' parenting, and their associations with anxiety in young children (aged 0-5 years) and anxiety precursors (behavioural inhibition (BI), fearful temperament, and shyness). The results suggested that associations between child anxiety and parental overcontrol, overprotection, and overinvolvement, did not differ for mothers and fathers. In addition, the role of challenging parenting behaviour (CPB) was examined. CPB is characterised by the playful encouragement of children to go beyond their own limits, such as rough-and-tumble play and safe risk-taking (Majdandžić, de Vente, & Bögels, 2015). Möller et al. (2016) concluded that mothers' CPB was not significantly related to child anxiety, whereas fathers' CPB was related to less child anxiety, thus, CPB may be an area of parenting particularly salient for fathers, and importantly, may be protective against childhood anxiety disorders (Bögels & Phares, 2008).

Anxiety was defined broadly in the meta-analysis by Möller et al. (2016) (i.e. including anxiety precursors). For example, in the study by Majdandžić, Möller, de Vente, Bögels, and van den Boom (2014) whilst the authors use the phrases 'child social anxiety'

and ‘child social behavioural inhibition’ interchangeably, the questionnaires used for child shyness and BI, appear to be measuring what Möller et al. (2016) defined as anxiety precursors, rather than anxiety symptoms or disorders per se. Consequently, it may be useful to examine the relationship between CPB and anxiety precursors, such as BI, as well as with child anxiety.

Majdandžić et al. (2015), examined whether mothers and fathers differ with respect to CPB and found little evidence of interparental differences in CPB when examined as a global construct in early infancy. There was suggestion that parental differences in CPB may change over child development (e.g. fathers’ rough-and-tumble play increased in late infancy, as did observed physical CPB in toddlerhood). Whilst there remains no sufficient evidence to claim interparental differences in levels of CPB, further study is required as to whether the *effects* of CPB on child development differ for mothers and fathers. Subsequently, Lazarus et al. (2016) tested the relationship of CPB towards child anxiety in preschool-aged children, whilst fathers engaged in more CPB than mothers, both fathers’ and mothers’ self-reported CPB was associated with lower report of child anxiety symptoms. Additionally, only mothers’ CPB was found to have a negative association with child anxiety diagnosis. Whilst these findings offer slightly disparate results to those obtained by Möller et al. (2016), the examination of this parenting behaviour remains in its infancy. Further, the study by Lazarus et al. (2016) was limited by the use of only self-reported CPB, the Challenging Parenting Behaviour Questionnaire (CPBQ4-6; Majdandžić, de Vente, & Bögels, 2010). To further examine paternal CPB, the current study developed a behavioural computer task.

One effect of paternal CPB on child development may be the reduction of anxiety symptoms; another may be the increased likelihood for children to engage with situations that are novel or challenging. According to Paquette (2004), central to the father-child interaction is challenging, physical play, or ‘Rough-and-Tumble’ play. As fathers are more likely than

mothers to encourage their young children to take calculated risks and be adventurous (Nielsen, 2012), it will be interesting to investigate the relationship between paternal encouragement of safe risk-taking and children's own risk-taking, and whether this varies as a function of child anxiety status.

Anxious parents may be less likely to encourage their child to engage with situations the child finds frightening or scary, therefore, parental anxiety may impact engagement in CPB. Turner, Beidel, Roberson-Nay, and Tervo (2003) found that anxiety disordered parents were less likely to engage in physical play with their children than non-anxious parents. However, when tested empirically, Lazarus et al. (2016) found no indication that parental anxiety was associated with CPB. As this was the first study to empirically test this association, replication is required.

We wish to extend understanding regarding the role of fathers' CPB and its association with child anxiety, temperament, and risk-taking, and, whether paternal anxiety impacts CPB. In line with these aims, the following hypotheses were examined: (1) Children whose fathers engage in more CPB will exhibit lower levels of anxiety compared to those whose fathers exhibit less CPB; (2) Children whose fathers engage in more CPB will be more likely to be behaviourally uninhibited (BUI) than children of fathers who engage in less CPB who will be more likely to be behaviourally inhibited (BI); (3) There will be evidence of convergent validity, illustrated by a positive significant relationship, between the two measures of fathers' CPB; the questionnaire and the novel computer task. (4) Children will take more risk on the CBCT when playing with their father than when playing alone; (5) Children who are more anxious will take less risk on the CBCT than less anxious children, and (6) Fathers with higher levels of anxiety will engage in less CPB than fathers with lower levels of anxiety.

Method

Participants

Participants were 67 preschool children (28 AD and 39 Non-AD; 34 female) ranging in age from 3.1 to 5.5 years ($M = 4.14$ years, $SD = .53$), and their mothers and fathers (n parents = 134). The sample comprised of children recruited via two pathways. Thirty-seven families were recruited from a larger randomised control trial (RCT) of an intervention for BI children (76 families from the RCT were mailed a letter inviting participation). These 76 families were invited to participate in this additional component of research as they had not yet commenced the intervention program targeting child anxiety. The families were invited to participate in a new measure developed to examine the father-child relationship that was convenient for families (i.e., fathers could participate from home, at any time). Of the 37 fathers who agreed to participate, 31 completed all required components of the study. Note that anxiety and parenting data for these 31 families are also published elsewhere (see Lazarus et al., 2016). An additional sample of 36 families was recruited via advertisements in a local parenting magazine, flyers to local preschools, and a research participant database, Neuronauts, at Macquarie University.

Mothers completed the Approach subscale of the Short Temperament Scale for Children via telephone (STSC; Sanson, Smart, Prior, Oberklaid, & Pedlow, 1994). High scores on the measure indicate lack of approach, whereas low scores indicate approach behaviour. Children scoring one standard deviation above the mean or greater were classified as BI, those scoring one standard deviation below or less were classified as BUI. Children screened as BI or BUI were invited to participate in the study. Participants predominately identified as being of Oceanic ethnicity (69.7%), 14.9% as Asian, 10.4% European, 1.5% American, 1.5% North African and Middle Eastern and 1.5% as African (with 1.5% having missing data). The majority of children were from middle to high-income families.

Measures

Child Anxiety Disorders. The Anxiety Disorders Interview Schedule for DSM-IV Parent Version (ADIS-P-IV; Silverman & Albano, 1996), was used with mothers to assess child anxiety. Interviews were conducted by HD, TM, YB and RL, trained on the ADIS-P-IV in our child anxiety clinic, supervised by JH, an experienced clinical psychologist. The ADIS-P-IV has excellent interrater agreement of kappa = 1.00 for overall anxiety diagnosis (Lyneham, Abbott, & Rapee, 2007). A second coder assigned independent diagnoses on 30% of interviews. Reliability for overall anxiety diagnosis in this study was excellent (kappa = .86). Diagnoses were considered ‘clinical’ if the clinical severity rating was four or greater, consistent with guidelines (Silverman & Albano, 1996) and prior research (see Hudson & Dodd, 2012).

Child Anxiety Symptoms. Mothers completed the Preschool Anxiety Scale (PAS; Spence, Rapee, McDonald, & Ingram, 2001) to provide an overall measure of preschool anxiety. The PAS contains 28 items reflecting areas broadly consistent with the DSM-IV diagnostic categories; such as social phobia and separation anxiety. The measure has good construct validity, and moderate to high reliability coefficients (Broeren & Muris, 2008). The total PAS score was used to measure child anxiety symptoms, internal consistency was excellent, $\alpha = .93$.

Paternal Anxiety Symptoms. Fathers completed the Depression Anxiety and Stress Scale Short Version (DASS-21; Lovibond & Lovibond, 1995), as a measure of paternal anxiety. The DASS-21 is a quantitative measure of depression, anxiety and stress and has good factor structure, concurrent validity and internal consistency (Antony, Bieling, Cox, Enns, & Swinson, 1998). Only the stress and anxiety subscales were used here. The anxiety subscale captures physiological aspects of anxiety and hyperarousal, whereas the stress subscale assesses aspects pertaining to more chronic, generalised worry (Brown, Chorpita,

Korotitsch, & Barlow, 1997). Cronbach's alpha was acceptable for fathers' anxiety ($\alpha = .71$), and good for fathers' stress ($\alpha = .83$).

Challenging Parenting Behaviour Questionnaire. Fathers completed the Challenging Parenting Behaviour Questionnaire 4-6-year-old version (CPBQ4-6; Majdandžić et al., 2010). The CPBQ4-6 is a 43-item scale that assesses CPB through seven subscales: risk-taking, rough-and-tumble play, teasing, assertiveness, competition, social daringness, and modelling. In addition to subscale scores, a total score is constructed for an overall measure of CPB. Fathers rated statements about interactions with their child (e.g., 'When I play tag with my child, I make myself hard to catch') on a 5-point Likert scale (1= *Not Applicable*, 5= *Completely Applicable*). Six items were reverse scored. The total score of the CPBQ4-6 has good reliability (see Lazarus et al., 2016). Cronbach's alpha for the total score was $\alpha = .88$, and for subscales were as follows: Risk Taking, $\alpha = .61$, Rough-and-Tumble Play, $\alpha = .64$, Teasing, $\alpha = .76$, Assertiveness, $\alpha = .45$, Competition, $\alpha = .69$, Social Daringness, $\alpha = .30$, and Modelling, $\alpha = .65$. Assertiveness and Social Daringness were removed due to unacceptable Cronbach's alphas ($\alpha < .5$).

Challenging Behaviour Computer Task (CBCT). Fathers and children completed the task at home via web-link. Designed to assess fathers' CPB, particularly the encouragement of safe risk-taking, the task is an adaptation of an objective measure of risk-taking propensity - the Balloon Analogue Risk Task -Youth Version (BART-Y) (for task details, see Lejuez et al., 2007). The CBCT requires children to take steps towards a playground. With each step the child gets closer to the playground, gaining a point, but is also at risk of stepping on a bindii³ or bee, ending the round. Participants must decide whether to continue taking steps towards the playground (gaining more points but also increasing the risk of stepping on a bindii or a bee), or save their points for that round. Saved points are

³ Bindii (*Soliva sessilis*) is a common Australian lawn weed whose burrs are covered with needle sharp spines.

added to an overall total. There are 15 rounds per trial. Children played the task twice, once alone and once with their father, the order of which was counterbalanced. The two trials enabled the measurement of children's risk-taking when playing alone and when playing with their father. The child and father trial enabled measurement of fathers' CPB.

The father and child trial was voice recorded and conversations were coded for fathers' CPB. Observer-rated child state anxiety during the task was also coded. The coding system is provided in an Appendix. Conversations were coded by *RL*, and 30% of conversations were reliability coded by an undergraduate psychology student, trained by *RL*. Reliability for the presence of child state anxiety during the computer task was excellent ($\kappa = .84$). Intraclass correlations were calculated with remaining CBCT variables to determine the interrater reliability of the two coders. Coders demonstrated adequate interrater reliability for fathers verbal Challenging Behaviour ($ICC = 0.87$), Overall Rating of Challenging Behaviour ($ICC = 0.83$), and Positive Reaction to Risk Event ($ICC = 0.81$). The task itself yielded a number of metrics from which two variables were calculated: Adjusted Child risk score and Adjusted Child and Father risk score (see Lejuez et al., 2007, for a rationale). For this task, 'Adjusted Risk' was defined as the average number of steps on rounds where no bindii or bees were stepped on (points were saved), divided by number of saved trials.

The CBCT was developed using images from photographs taken by *RL*, exported by *PR* into Processing v1.5.1 (Fry & Reas, 2001), the software used to construct the game. Four volunteer children (2 females) aged between 3.5 and 5.2 years ($M age = 4.18$ years) and their fathers participated in a pilot to ensure comprehension of task instructions and feasibility. Children experienced difficulty in recognising keyboard buttons required for the game. Subsequently, participants were sent two different coloured stickers, one for the enter/return button and one for the spacebar. No other navigational issues were raised.

Procedure

The university ethics committee approved all procedures prior to commencement. Parents provided consent for themselves and their child to participate and were sent links to online questionnaires. Maternal questionnaires included demographic information and the PAS. Paternal questionnaires included demographic information, DASS-21, and CPBQ scales. For the RCT families ($n = 31$), ADIS-IV-P interviews were conducted in person with mothers during a 2-hour research session at Macquarie University. For remaining families ($n = 36$), ADIS-IV-P interviews were conducted over the phone with mothers (to ensure consistency in research design). Families of BI children involved in the RCT ($n = 16$) were reimbursed \$100 for their time⁴. Families of BUI children, and BI children not part of the larger RCT, were reimbursed \$50 for their time.

Data from the CBCT was automatically uploaded into web space provided by the University, where it was stored until all data was collected. Fathers were debriefed as to the true purposes of the task and were emailed an online link with a new consent form (allowing opportunity to re-consent or withdraw consent).

Data Preparation

CBCT data was exported to Microsoft Excel where Adjusted Risk Scores were calculated. Three participants reached the maximum number of steps, stepping on a bindii or bee at each round of the task in the Child Alone version of the CBCT. These participants would have an adjusted risk score of zero when they actually had high levels of risk-taking, scores were changed to reflect the highest adjusted risk score obtained in the sample (9.00).

Two participants had missing data for mother-report PAS. Three families were unable to complete the computer task at the arranged times, from the remaining 64 families, complications during uploading of CBCT data meant 6 participants had missing data on the

⁴ These families were required to participate in three research sessions at Macquarie University as part of the larger RCT.

child alone trial, and 7 on the child and father trial. Complications included the game freezing, or participants closing the game before data had uploaded. Furthermore, 17 children (13 BI; 4 BUI) refused to play the child-alone trial of the CBCT, resulting in a large amount of missing data for this variable. Analysis was conducted with all available data. No differences were found between those who had complete or missing data on demographic, anxiety, or child temperament variables.

Distributions for PAS total, DASS-21 anxiety and stress scores, fathers' positive reaction to risk encountered, fathers' verbal challenging behaviour count, child Adjusted Risk Score, and child and father Adjusted Risk Score were positively skewed. Correction was attempted using square-root and logarithm transformations. Transformed variables continued to violate assumptions of normality. Consequently, original values for these variables and non-parametric analyses were used where applicable. Although no differences were found between non-parametric and parametric tests, due to small sample size and non-normality, non-parametric tests are reported. A significance level of .05 was set for all analyses.

Results

In this study, child anxiety was represented by three separate variables: PAS (a continuous variable) anxiety diagnosis from the ADIS-IV-P (AD or Non-AD – a categorical variable), and state anxiety experienced during the CBCT task (Anxiety or No-Anxiety – a categorical variable). Fathers' CPB was evaluated by two separate measures: the CPBQ (five of the original 7 subscales, and a total score) and the CBCT (two continuous variables; positive reaction to risk encountered, and verbal challenging behaviour, and one categorical variable; overall rating of challenging behaviour). The effect of fathers' CPB on children's risk-taking was evaluated through comparison of an adjusted risk score on the CBCT in the father-child and child-alone trials.

Preliminary Analyses

Demographic Analyses. Chi-square and F-tests identified no significant differences between group (AD and Non-AD), BI status (BI and BUI) or samples (RCT and the additional sample) on demographic variables, (exact $p > 0.05$)⁵.

Correlations amongst Continuous Measures. Spearman's Rank order correlations amongst all continuous measures are reported in Table 4.1. There was little evidence of an association between child anxiety on the PAS and measures of fathers' CPB on the CPBQ (all $ps > .05$, all $rs < .21$). Fathers' DASS anxiety and stress were also not significantly associated with fathers' CPB with the exception of fathers' modelling on the CPBQ and fathers' DASS stress score ($r = .24$, $p = .046$), noteworthy is that this was not in the hypothesised direction; as paternal stress increased so did paternal report of engaging in modelling of CPB. The two measures of fathers' CPB on the CBCT were not significantly associated with mother-reported child anxiety on the PAS, fathers' anxiety on the DASS, nor fathers' CPB on the CPBQ.

Paternal Challenging Behaviour and Child Anxiety

In addition to the correlations reported above between fathers' CPB (CPBQ, CBCT) and child anxiety (PAS), the relationship between fathers' CPB and child anxiety was further examined due to an additional two measures of child anxiety (diagnosis, and state anxiety displayed during the CBCT task).

Child Anxiety Diagnosis. To examine the relationship between fathers' CPB and child anxiety diagnosis, this hypothesis was addressed in two ways due to the many variables measuring CPB used in the study. First, we ran a series of Mann-Whitney U Tests (to examine differences between children with an anxiety disorder and those without (AD vs. Non-AD)). These analyses revealed no significant difference between anxiety groups on

⁵ Due to small sample size, some variables had expected cell counts of less than five, violating assumptions of the Chi-square statistic. Exact significance was computed for all Chi-Square analyses.

fathers' CPB on the teasing, risk-taking, competition, modelling and total score of the CPBQ ($ps > .05$). A significant difference was revealed on the rough-and-tumble play subscale of the CPBQ, where fathers reported engaging in less rough-and-tumble play of children with an anxiety disorder ($Md = 3.25, n = 28$) compared to those without an anxiety disorder ($Md = 3.67, n = 39$), $U = 388.5, z = -2.01, p = .045$ with a small effect ($r = .24$).

Second, to examine whether fathers' engagement in CPB on the CBCT task (their total verbal CPB, and positive response to encountered risk) differed depending on the anxiety status of their child, we ran additional Mann-Whitney U Tests. However, no significant differences were found for either variable ($ps > .05$).

Finally, a chi-square test for independence (with Fisher's exact test) to examine whether fathers' overall score of CPB on the CBCT was associated with child anxiety status, found no significant association, $\chi^2(6, n = 64) = 3.24, p = .78, Cramer's v = .22$.

Child State Anxiety on the CBCT. To examine the relationship between fathers' challenging parenting behaviour and children who experienced anxiety or did not experience anxiety during the CBCT, we ran a series of Mann-Whitney U Tests. The Mann-Whitney U Tests revealed no significant difference in fathers' challenging parenting behaviour on the rough-and-tumble play, and competition subscales ($p > .05$), and trends were evident for the teasing ($p = .065$) and modelling subscales ($p = .058$). Significant differences were found for the risk-taking and total scales of the CPBQ, where it was observed that children who displayed anxiety during the CBCT task, had fathers who reported *greater* risk-taking and total CPB on the CPBQ4-6. These results can be viewed in Table 4.2.

To compare groups with respect to fathers' challenging behaviour on the CBCT, three analyses were conducted. Two Mann-Whitney U Tests compared task anxiety groups on father's verbal challenging behaviour, and positive response to risk on the CBCT. Results revealed no significant difference between children who displayed anxiety during the task

and those that did not with respect to these measures of fathers' challenging parenting behaviour on the CBCT. The final analysis was a Chi-square test for independence (with Fisher's exact test), to compare these groups with rating of fathers' overall challenging behaviour, which was not significant, $\chi^2(6, n = 64) = 5.39, p = .49, Cramer's v = .29$. Results of these analyses suggested no differences between children who displayed anxiety and those that did not, as measured by the CBCT.

Paternal Challenging Behaviour and Behavioural Inhibition

To examine the relationship between fathers' CPB and child BI status (BI vs BUI), a series of Mann-Whitney U Tests was conducted with respect to continuous measures of CPB (fathers' report of CPB on the CPBQ, and on the CBCT: fathers' verbal CPB, and fathers' positive response to risk). The results of the Mann-Witney U Tests indicated that fathers' CPB (on the CPBQ) and fathers' verbal CPB and positive response to risk (on the CBCT) did not differ across child BI status (p 's $>.05$). To examine whether fathers' overall CPB (a categorical variable) was associated with child BI status, we ran a Chi-square test for independence (with Fisher's exact test) which was not statistically significant, $\chi^2(6, n = 64) = 5.14, p = .53, Cramer's v = .28$. Fathers' CPB did not differ for BI and BUI children across several measures of CPB.

Assessing convergent validity between the CPBQ and CBCT

To examine the relationship between the CBCT and the CPBQ, two analyses were conducted. Spearman's Rank correlations revealed negligible positive and negative correlations between the CPBQ scales and fathers' positive response to risk, and fathers' verbal challenging behaviour on the CBCT. None of the correlations were statistically significant ($p > .05$), summarised in Table 4.1. To compare fathers' overall rating of verbal challenging behaviour on the CBCT to the various subscales of the CPBQ, a series of

Kruskal-Wallis Tests were conducted. Fathers' overall verbal rating of challenging behaviour did not differ across measures of the CPBQ ($p > .05$).

Child Risk-Taking on the CBCT

To examine the difference in children's risk-taking across trials of the CBCT, the Wilcoxon Signed Rank Test was used. A statistically significant increase in children's risk-taking was found from the child alone trial to the child and father trial, $z = -2.89$, $p = .004$, with a medium effect size ($r = .45$) (displayed in Figure 4.1).

To examine differences between the two trials of the CBCT for AD and Non-AD groups, and for children who displayed anxiety during the task and those that did not, the Mann-Whitney U test was used. No significant differences were found in child risk score measured on the CBCT between the AD ($Md = 3.36$, $n = 15$) and Non-AD groups ($Md = 2.62$, $n = 29$), $U = 177.50$, $z = -.99$, $p = .322$, $r = -.14$. Similarly, no significant differences were found for child and father risk score between the AD ($Md = 3.60$, $n = 24$) and Non-AD groups ($Md = 3.25$, $n = 35$), $U = 408.00$, $z = -.18$, $p = .853$, $r = -.02$; see also Figure 4.1. Further, no significant differences were found in child risk score measured on the CBCT between the Anxiety ($Md = 2.71$, $n = 6$) and No-Anxiety groups ($Md = 3.00$, $n = 38$), $U = 90.00$, $z = -.82$, $p = .142$, $r = -.12$. Similarly, no significant differences were found for child and father risk score between the Anxiety ($Md = 3.03$, $n = 16$) and No-Anxiety groups ($Md = 3.46$, $n = 43$), $U = 313.00$, $z = -.53$, $p = .597$, $r = -.07$; see also Figure 4.2.

Thus, no differences between risk-taking and child anxiety status were observed. Similarly, no differences were obtained between risk-taking and child anxiety displayed during the task. However, results from the Wilcoxon signed-rank suggest that children take more risk in the father and child trial than when playing the task alone.

Discussion

This study proposed to: i) investigate the relationship between paternal CPB towards childhood anxiety, ii) investigate the relationship between paternal CPB and BI; iii) demonstrate convergent validity between two measures of fathers' CPB, iv) ascertain whether children would take more risk on a risk-taking task when playing with their father compared to when playing alone; v) examine whether children who are anxious take fewer risks compared to less anxious children; and, vi) to examine the relationship between paternal anxiety and CPB.

This study obtained mixed findings for the relationship between fathers' CPB and child anxiety, and no evidence of a relationship between fathers' CPB and BI. Preliminary findings showed no significant relationships between paternal CPB, as measured by the computer task, and child anxiety across symptom, diagnostic, and state measures of child anxiety. However, when fathers' CPB was measured via self-report questionnaire, partial support for the hypothesis was obtained. Fathers of anxious children reported engaging in less rough-and-tumble play than fathers of non-anxious children (when child anxiety was measured through diagnostic clinical interview). Contrary to expectations, children who were observed as anxious during the CBCT had fathers' who reported significantly *greater* risk-taking and total CPB on the questionnaire measure, that is, children who presented as anxious during the computer task had fathers who reported greater levels of risk-taking and total CPB on a self-report questionnaire. Potential explanations for the current findings include missing data, lack of variation within the data, and differences between the two measures used to capture CPB (contributing towards a lack of convergent validity).

As noted, there was a large amount of missing data for the child-alone version of the computer task due to several children ($n = 17$) refusing to play the task alone. With 12 of these children identified as having an anxiety disorder (13 BI), there was a large proportion

of data missing from this group, resulting in a smaller sample size and reduction in power. Another possibility is that the coding for the CBCT may lack the sensitivity to capture the relationship between CPB and child anxiety. Variables of fathers' CPB on the computer task were positively skewed, with few fathers scoring in the low to mid-range of the coding scheme. Possibly, as Bögels and colleagues have eluded (Bögels & Perotti, 2011; Bögels & Phares, 2008), CPB may be a quality that is characteristic to fathers, whereby the majority of fathers may engage in such behaviours. To overcome this limitation, the CPBQ4-6 could be used as a screening measure to obtain a sample of fathers low on CPB, to explicitly study fathers who engage in less CPB and the hypothesised effect towards childhood anxiety. Further, as the CBCT was conducted via telephone, relying upon verbal cues, potentially useful information (i.e. gestures) may have been missed through this methodology. This is particularly relevant here as CPB, and fathers' parenting more broadly, is suggested to be quite physical in nature (Möller, Majdandžić, de Vente, & Bögels, 2013). Future directions for the use of this task may include the use of video-conferencing software to record child-father interactions, allowing for more sophisticated coding schemes to capture CPB whilst still minimising impact to participants, a key strength of this measure.

As we wished to demonstrate convergent validity between the CPBQ4-6 and the CBCT, the lack of associations between the computer task and questionnaire, was surprising. Particularly the lack of association with the risk-taking subscale of the questionnaire, given the CBCT was designed as an adaptation to the BART-Y, a measure assessing propensity for risk-taking (see Lejuez et al., 2007). Such results may be explained by examining the differences of each measure. The CPBQ assesses CPB broadly through seven domains. The CBCT on the other hand, assessed fathers' CPB through a specific risk-taking measure. Thus, while the CBCT may provide a behavioural measure of fathers' CPB, it only captures behaviour at a single time point, providing only a snapshot of paternal CPB. In contrast, the

CPBQ provides a more global measure of CPB. Both measures may *differentially* assess CPB. Alternatively, the measures may not be providing sufficient samples of fathers' CPB. For example, two CPBQ scales: 'Social Daringness' and 'Assertiveness' were removed from analyses due to low internal consistency, potentially losing important information regarding CPB. Further, it is not clear how well responses obtained on the CBCT correspond with real-life behaviour. As the task was adapted from a risk-taking measure, this may have elicited greater CPB from fathers than they would ordinarily exhibit, potentially explaining the lack of convergence between the CPBQ and CBCT.

The CBCT was also constructed to examine children's risk-taking with and without the presence of the father. Children were found to take more risks when playing the computer task with their father than when alone, providing support for the notion that fathers have the ability to activate risk-taking in children (Bögels & Phares, 2008; Paquette, 2004). This was further evaluated by comparing trials with respect to children's level of anxiety where the differences in risk-taking between these children were not statistically significant. These results present interesting findings, implying that fathers may have a general tendency to encourage risk-taking and challenge their children's behaviour (Paquette, 2004), and these results suggest that this tendency is irrespective of child anxiety status. The primary finding from the CBCT, that the presence of the father facilitates greater risk-taking in children, is worthy of further investigation. This may be beneficial in terms of father involvement in child anxiety treatment, as fathers may be helpful in challenging their children to engage with concepts they find daunting, such as during exposure therapy.

It is important to consider that these findings are part of preliminary studies investigating the relationship between paternal CPB and childhood anxiety, as although the relationship has been examined previously, studies to date have been conducted across a range of developmental periods, countries, and with varying methodologies for the

assessment of challenging parenting behaviour as well as child anxiety and its precursors. Whilst exploration is necessary in the initial stages of examining a parenting construct, studies confirming the psychometric properties and validity of these measurement tools are warranted in order to obtain consistency to allow for comparison across studies as well as to allow for conclusions to be drawn with regards to the relationship of this parenting behaviour towards child anxiety.

Paternal anxiety may interfere with a fathers' ability to challenge their children's behaviour (Bögels & Phares, 2008). However, we found no convincing evidence of paternal anxiety impacting fathers' CPB. The use of a community sample meant low representation of fathers reporting elevated anxiety; only 8 fathers (11.9%) in the present sample had a total DASS anxiety score above the male norm of 4.7 (as per the DASS manual; Lovibond & Lovibond, 1995). Thus, similar to conclusions by Lazarus et al. (2016), the low representation of fathers reporting elevated anxiety in the sample may not have been high enough to be able to detect a relationship towards CPB. Alternatively, CPB may be a characteristic of paternal parenting behaviour that is not affected by fathers' anxiety. Future research with clinical samples is required to confirm these findings. It is also possible that fathers may have underreported their own anxiety, particularly fathers of anxious children, as has been noted in the literature (see Hudson & Rapee, 2002). Additionally, we assessed fathers' current anxiety using the DASS, potentially providing insufficient representation of anxiety by excluding report of past anxiety. In their study, Cooper, Fearn, Willetts, Seabrook, and Parkinson (2006) found no elevated risk of current paternal anxiety in parents of anxious children, however an elevated risk of paternal *lifetime* anxiety disorder was evident. Whilst future research may benefit from using more thorough diagnostic measures of paternal anxiety, often acknowledged in the literature is the difficulty involved in the assessment of fathers - due to work and time constraints (Phares, 1992). Hence, the present study utilised a

short self-report measure. Furthermore, as part of the sample was obtained from a larger RCT, consistency in measures was required. Future research may benefit from multi-informant reports of fathers' CPB as well as anxiety, such as maternal reports, to gain more thorough understanding of the relationship.

In addition to the noted methodological limitations of this study, discussion of plausible sample bias inherent in the current study is warranted. Part of this sample was recruited from a larger RCT where children were initially selected for study inclusion based on their behaviourally inhibited (BI) or behaviourally uninhibited (BUI) temperament using an extreme groups design. Whilst the use of an extreme groups study design allowed for the examination of an important risk factor with respect to the aetiology of child anxiety, it limits whether the current findings can be applied to the general population, and the full spectrum of child temperament. Consequently, results of the current study should be considered in light of this limitation with regards to the representativeness of the sample.

Despite these limitations, the strengths and implications of the current study merit acknowledgement, especially given the scarcity of research into the relationship between fathers and childhood anxiety. In addition to a self-report measure of CPB, this study employed a behavioural measure of fathers' CPB. Fundamental to the current study was the novelty of the CBCT task to measure CPB; assessing paternal CPB in an accessible and time sensitive way, attempting to counter reported difficulties of recruiting fathers for research, such as time constraints. Furthermore, during debrief, all fathers expressed surprise when the true purpose of the research was revealed, and, many of the children reported fear of the bees and bindii during the task, adding to the face validity of this measure. This study also examined specific sub-types of CPB such as risk-taking, and rough-and-tumble play in addition to the global construct, finding that fathers of anxious children reported engaging in less rough-and-tumble play than fathers of non-anxious children, prompting exciting avenues

for future investigation. Another strength of the study was the multi-method assessment of childhood anxiety, incorporating questionnaire and diagnostic assessments as well as a measure of child state anxiety during the computer task.

This study investigated the relationship between fathers' CPB and childhood anxiety. Despite the utilisation of several diverse methodologies for the assessment of child anxiety *and* fathers' CPB, across several analyses only one statistically significant relationship (with a small effect size) was found between fathers' CPB and child anxiety. This was the relationship between fathers' rough-and-tumble play (measured via self-report questionnaire) and childhood anxiety, measured through a clinical diagnostic tool. Further exploration of CPB as well as this identified subcomponent of CPB (rough-and-tumble play) is warranted prior to drawing strong conclusions about the relationship between paternal CPB and child anxiety. Results did not support a relationship between paternal anxiety and CPB, nor between paternal CPB and child anxiety when measured by the computer task. Several avenues for further development of the CBCT have been suggested. Importantly, we found that children took more risk on the CBCT when playing with their father than when alone, and this effect did not differ across child anxiety status. These results imply that the presence of the father may assist children to be braver in unfamiliar situations, potentially beneficial to child anxiety interventions, however no strong evidence was obtained for the relationship between CPB and childhood anxiety.

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Table 4.1

Spearman's Rank Correlations between Continuous Measures

Variable	1	2	3	4	5	6	7	8	9	10	11
1. PAS	1										
2. DASS Father Anxiety	.103	1									
3. DASS Father Stress	.076	.644**	1								
4. CPBQ Teasing	.032	.077	.191	1							
5. CPBQ RTP	-.204	-.164	-.052	.529**	1						
6. CPBQ Risk-Taking	-.025	.015	.141	.431**	.398**	1					
7. CPBQ Competition	-.066	.122	.109	.407**	.274*	.300*	1				
8. CPBQ Modelling	-.112	.148	.244*	.392**	.230	.482**	.501**	1			
9. CPBQ Total	-.123	.015	.174	.698**	.617**	.725**	.665**	.756**	1		
10. Risk Positive CBCT	-.033	-.162	.068	-.081	-.038	-.150	-.136	-.182	-.095	1	
11. Verbal CPB CBCT	-.092	-.099	-.047	-.090	.002	-.008	.060	.022	.077	.304*	1

Note. Statistical significance: ** $p < .01$. * $p < .05$., PAS = Preschool Anxiety Scale, DASS = Depression Anxiety Stress Scales, CPBQ = Challenging Parenting Behaviour Questionnaire 4-6 Year version, RTP = Rough-and-tumble play subscale of the CPBQ4-6, Risk Positive CBCT = Fathers positive reaction to risk encountered on the Challenging Behaviour Computer Task, Verbal CPB CBCT = fathers' verbal challenging behaviour count on the Challenging Behaviour Computer Task.

Table 4.2

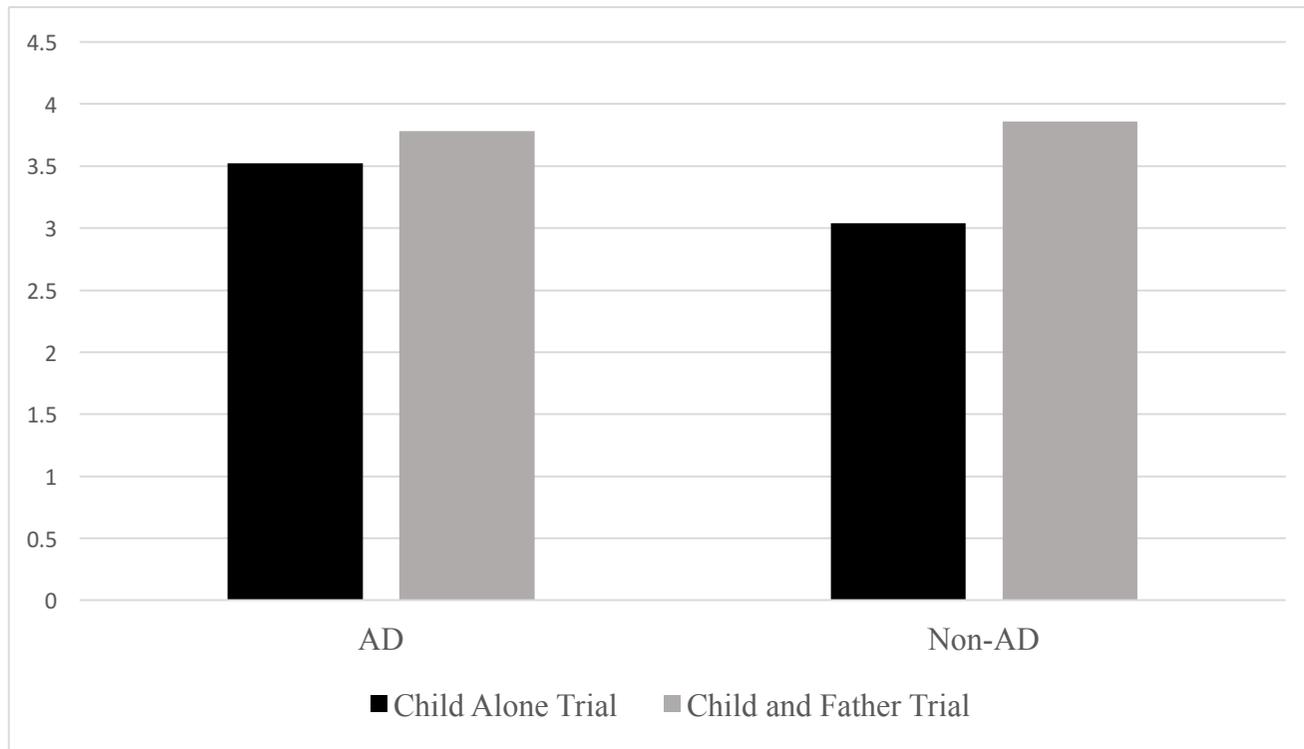
Mann-Whitney U-Test for the CPBQ and Child State Anxiety on the CBCT.

	CPBQ Risk-Taking	CPBQ Total
<i>Mann-Whitney U</i>	183.5	232.5
<i>Z</i>	-3.13	-2.35
<i>p</i>	.002*	.019*
<i>r</i>	0.39	0.29
Median (Anxiety)	4.17	3.08
Median (No Anxiety)	3.67	2.93

Note. * $p < .05$.

Figure 4.1.

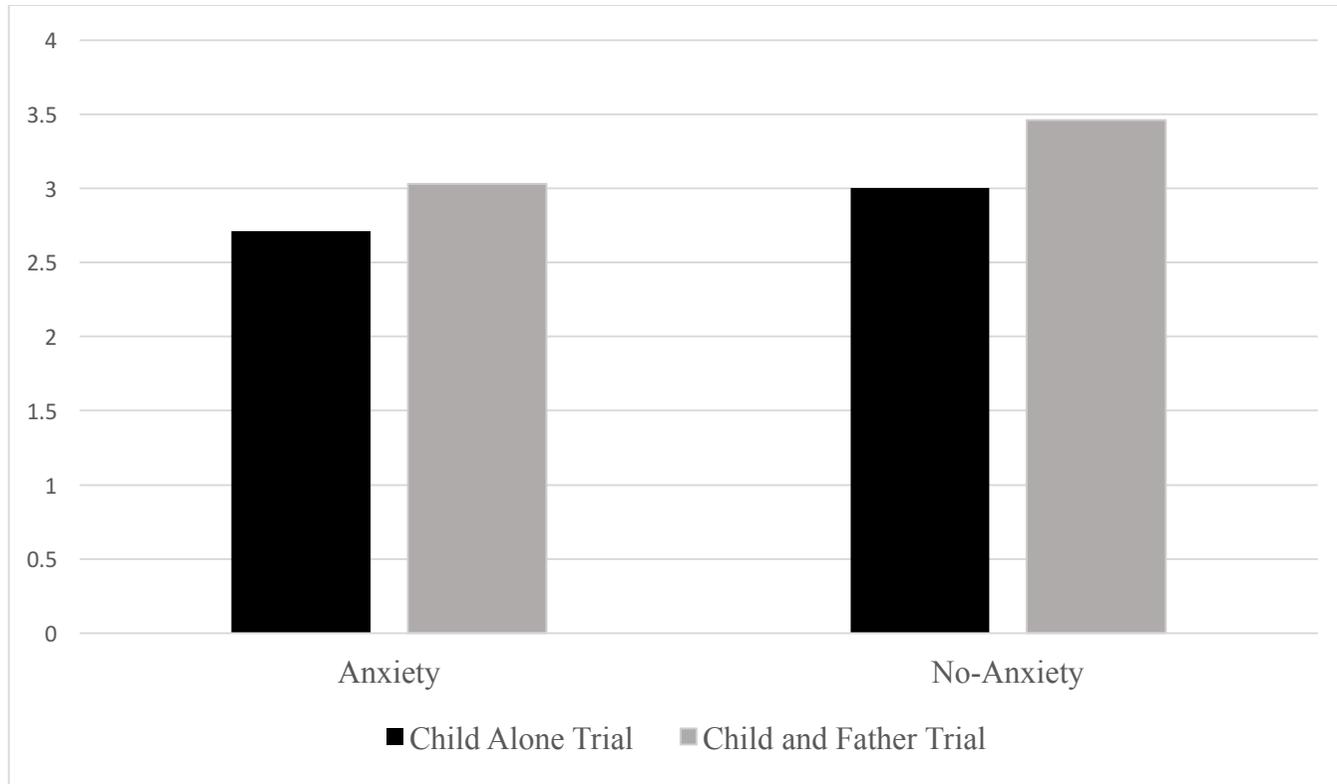
Adjusted Risk Score on the CBCT across Trial and Anxiety Group



Note. AD = Children classified as having an anxiety disorder, Non-AD = Children without an anxiety disorder.

Figure 4.2.

Adjusted Risk Score on the CBCT Across Trial and State Anxiety Group



Note. Anxiety = Children who displayed anxiety during the CBCT, No-Anxiety = Children who did not display anxiety during the CBCT.

The questionnaire measures used to assess the construct of CPB were developed in The Netherlands. Chapters 2, 3, and 4, utilised two of these measures; the CPBQ7-12 and the CPBQ4-6 (Majdandžić et al., 2010), which were translated from Dutch to English. Whilst the papers in this thesis have utilised this questionnaire throughout, it is not yet known if this measure for assessing CPB is equivalent across The Netherlands and Australia. Next is the final empirical paper “The Structure of Challenging Parenting Behaviour and Associations with Anxiety in Dutch and Australian Children” which presents a psychometric evaluation of the 4 to 6-year old version of the Challenging Parenting Behaviour Questionnaire (CPBQ; Majdandžić et al., 2010). This paper is a collaborative effort from two research teams combining data to assess the cross-country and cross-parent gender measurement invariance of the CPBQ4-6 in parents of preschool-aged children. Further, this paper continues to examine the relationship between CPB and childhood anxiety across symptom and diagnostic measures of anxiety.

Chapter 5.

The Structure of Challenging Parenting Behaviour and Associations with Anxiety in Dutch and Australian Children

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Abstract

Challenging parenting behaviour (CPB), a novel construct that includes active physical and verbal behaviours that encourage children to push their limits, has been identified as a potential buffer against child anxiety. This study aimed to 1) evaluate the measurement invariance of the Challenging Parenting Behaviour Questionnaire (CPBQ4-6) across Dutch and Australian mothers and fathers of preschoolers; 2) examine differences in levels of CPB across mothers and fathers, and across countries; 3) examine whether parents' CPB predicts less child anxiety symptoms and disorders. Participants were 312 families, 146 Dutch and 166 Australian, with their 3 to 4-year-old child (55.8% girls). Fathers' and mothers' CPB was measured using the CPBQ4-6, child anxiety symptoms and presence of anxiety disorders were assessed using maternal reports. Multigroup confirmatory factor analyses revealed equivalence of factor structure and factor loadings (all significant) of the CPBQ4-6 across mothers and fathers, and countries. There was evidence of partial scalar invariance, indicating that the groups differed on some subscales of the CPBQ4-6. Australian mothers scored lower on the CPB factor than Australian fathers and Dutch parents. Structural equation models showed that CPB predicted fewer child anxiety symptoms and anxiety disorders for all groups. The study confirms that the CPBQ4-6 is appropriate for use with Dutch and Australian parents of preschool-aged children, and identifies CPB as a multifaceted and coherent construct. The negative relations between CPB and child anxiety suggest that CPB has a protective role in childhood anxiety, and is important to examine in future research and interventions.

Keywords: Challenging parenting behaviour, fathers, measurement invariance, child anxiety.

Childhood anxiety disorders are chronic, debilitating, and often persist into adulthood (Merikangas et al., 2010). The chronicity of these disorders in addition to their accumulating personal, social, and economic impact (Bodden, Dirksen, & Bögels, 2008; Zubrick, Silburn, Burton, & Blair, 1999) emphasizes the need to continue to develop our understanding of the respective factors involved in their etiology and maintenance (Bayer et al., 2011; Pahl, Barrett, & Gullo, 2012). Existing research has established a relationship between parenting behaviours and the development and maintenance of childhood anxiety disorders (Creswell, Murray, Stacey, & Cooper, 2011), with findings often highlighting the importance of parental overcontrol and rejection (McLeod, Wood, & Weisz, 2007; Murray, Creswell, & Cooper, 2009; Rapee, Schniering, & Hudson, 2009). The majority of this research has focused primarily on the parenting behaviour of mothers, making it difficult to examine the differential effect of parental sex (Bögels & Phares, 2008; Creswell et al., 2011). Given that paternal overinvolvement and overcontrol have also been associated with child anxiety (e.g. Bögels, Bamelis, & van der Bruggen, 2008; Greco & Morris, 2002; Hudson & Rapee, 2002; Möller, Nikolić, Majdandžić, & Bögels, 2016), further research is required to examine the role of fathers, as both maternal and paternal parenting behaviours may contribute to the intergenerational transmission of anxiety (Möller et al., 2016).

Whilst it is important to examine maladaptive parenting behaviours that may act as risk factors in the development of childhood anxiety disorders, it is just as pertinent to examine protective parenting behaviours. One such factor that may act as a buffer against early anxiety is *challenging parenting behaviour* (CPB; Majdandžić, de Vente, & Bögels, 2015). Through this behaviour, parents, particularly fathers, are suggested to play an important role by encouraging their children to take risks, practice social assertion, and explore unfamiliar situations with confidence (Bögels & Perotti, 2011; Bögels & Phares, 2008). CPB can include physical play (particularly rough-and-tumble-play), encouraging

children to push their limits through exposure to safe risks, giving the child a fright, letting the child lose a game, encouraging the child to be assertive, and modelling of challenging behaviour by the parent (Majdandžić, de Vente, & Bögels, 2015). Challenging the child's behaviour may have a particular influence on development, preparing the child to interact with the world outside the family (Bögels & Perotti, 2011; Bögels & Phares, 2008). This exposure to safe risk environments enables children to be braver in unfamiliar situations as well as stand up for themselves, which in turn fosters the child's confidence (Paquette, 2004). If exposure to small risks such as rough-and-tumble play benefits the child, fathers who do not encourage these interactions may increase the child's risk for developing anxiety (Bögels & Phares, 2008).

Whilst there is theoretical support for CPB (Bögels & Perotti, 2011; Bögels & Phares, 2008), a growing body of research has begun to empirically examine this novel parenting construct (see Lazarus et al., 2016; Majdandžić, Möller, de Vente, Bögels, & van den Boom, 2014; Möller, Majdandžić, & Bögels, 2014). In the earliest study to empirically examine this construct, Majdandžić et al. (2014) measured maternal and paternal CPB via observation and children's (siblings aged 2 and 4 years, respectively) social anxiety was observed at two time-points, 6 months apart. For the older preschool-aged children, Majdandžić et al. (2014) found more paternal CPB to be associated with decreases in social anxiety, whereas more maternal CPB was associated with an increase in child social anxiety 6 months later. When examining this construct in 1-year-old infants, Möller et al. (2014) utilised parent-report measures of CPB and infant temperamental fear and found that paternal, but not maternal, CPB was associated with less infant anxiety. In an attempt to replicate and extend these findings, Lazarus et al. (2016) examined the relationship between parent-reported CPB and maternal-reported child anxiety at both the symptom *and* disorder level in 3- to 4-year-olds. Mothers' and fathers' CPB were *both* associated with lower report of child anxiety at the symptom

level. Whilst at the disorder level, only mothers' CPB was found to predict decreased risk for clinical child anxiety diagnosis.

There are several plausible explanations for the disparate findings amongst studies examining CPB and its relation with child anxiety. One explanation is that these studies utilised differing measures and methodology for the assessment of childhood anxiety; social anxiety measured via observation (Majdandžić et al., 2014), mother and father report of infant temperament (Möller et al., 2014), and maternal-only report of child anxiety symptoms through both questionnaire and structured diagnostic interviews (Lazarus et al., 2016). Second, these studies utilised different measures to assess the CPB construct. That is, Lazarus et al. (2016) and Möller et al. (2014) utilised differing age-adapted versions of the Challenging Parenting Behaviour Questionnaire (CPBQ4-6; Majdandžić, de Vente, & Bögels, 2010), a version designed for 4-6 year olds and one for 1-year-olds respectively, whereas Majdandžić et al. (2014) assessed CPB via observation through a set of structured tasks. Whilst the CPB scale used by Möller et al. (2014) has recently been psychometrically validated and displayed modest and significant convergence with observational measures of CPB (see Majdandžić et al., 2015 for a full discussion), Lazarus et al. (2016) utilised the English translation of a newly developed Dutch questionnaire (CPBQ4-6; Majdandžić et al., 2010), yet to be psychometrically validated. Lastly, these studies assessed children from different countries (The Netherlands and Australia) and at diverse stages of development (i.e. infancy: (Möller et al., 2014); toddlerhood age: (Majdandžić et al., 2014); and preschool age: (Lazarus et al., 2016; Majdandžić et al., 2014).

Findings across studies also vary with regards to the differences in levels of CPB between fathers and mothers. Möller et al. (2014) found no differences between fathers and mother in levels of self-reported CPB towards their 1-year-old infant. In the observational study of Majdandžić et al. (2014), fathers were significantly more challenging towards their

2-year-old child than mothers but equally challenging towards their 4-year-old. Lazarus et al. (2016) reported higher levels of fathers' self-rated CPB compared to mothers' CPB towards their preschooler. The longitudinal study of Majdandžić et al. (2015) on CPB in early childhood revealed no differences between fathers and mothers in CPB in infancy (at 4 months and 1 year) using self-rated and observational measures of CPB, whereas in toddlerhood (at 2.5 years), fathers rated themselves higher on CPB than mothers. At the level of subcomponents of CPB, this study showed evidence of fathers scoring higher than mothers specifically on physical play, starting in late infancy. Thus, these studies suggest that fathers and mothers are equally challenging to their child in infancy, but that fathers may show higher levels of CPB than mothers at preschool age and perhaps beyond.

A significant limitation of the work to date comparing mothers and fathers CPB, is that there is as yet only one study assessing the equivalence of this measure for mothers and fathers (Majdandžić et al., 2015). This study found equivalence of factor structure and factor loadings for fathers and mothers at 1 year and 2.5 years. It is unclear whether the factor structure of the measure is consistent across mothers and fathers beyond toddlerhood. Further, it is possible that the contradictory findings explained above could be indicative of cultural differences between Dutch and Australian families. We do not know whether the measure is equivalent across countries. For example, is CPB in the Netherlands and Australian conceptualised the same way, is the underlying construct the same, and finally, do the scores reflect the same degree of CPB for Dutch and Australian mothers and fathers? Thus, there is a need to assess the equivalence of this measure when used in different populations. Further, in order to be able to draw comparisons, it will be important to compare the CPB of parents of children at a similar stage of development, whilst also ensuring comparable measures are utilised for the assessment of childhood anxiety. These steps are necessary prior to forming strong conclusions about the relationship of CPB towards

childhood anxiety disorders and making inferences about differential parenting effects.

The aims of the current study were therefore: (1) to assess measurement invariance of the Challenging Parenting Behaviour Questionnaire 4-6 year version (CPBQ4-6; Majdandžić et al., 2010) (a) across fathers and mothers, and (b) across Dutch versus Australian parents; (2) to assess whether levels of CPB differ (a) across fathers and mothers, and (b) across Dutch and Australian parents; and (3) to examine the predictive relations between parents' CPB and child anxiety symptoms and disorders, and whether these were equivalent across mothers and fathers, and across countries. We hypothesised (1) to find measurement equivalence across fathers and mothers, and across countries; (2) that fathers would rate themselves higher than mothers on CPB in both countries; and (3) that parents' CPB would predict fewer child anxiety symptoms and disorders.

Method

Participants

Participants were 312 families, drawn from two countries and consisting of two Dutch samples (total $n = 146$) and two Australian samples (total $n = 166$).

Dutch Sample

Participants from the first Dutch sample were 103 couples who participated with their first child in the ongoing longitudinal study The Social Development of Children, on the antecedents of anxiety in young children (Aktar, Majdandžić, de Vente, & Bögels, 2013; de Vente, Majdandžić, Colonesi, & Bögels, 2011). Of the 151 families who started participation in the study at the prenatal measurement, 118 participated at the measurement occasion when the child was 4.5 years. For the current study, data on CPB of one or both parents (101 mothers and 100 fathers) were available for 103 children (59 girls and 44 boys), M age = 4.50 years, $SD = 0.05$ (range 4.40 to 4.68). Recruitment took place when couples were expecting their first child. Families were recruited through leaflets provided by

midwives in Amsterdam and in cities within a range of 50 kilometers around it, at pregnancy courses, baby shops, and through advertisements in magazines and on websites on parenthood. The vast majority of parents were of Dutch origin (97% fathers; 94% mothers). Educational level was fairly high; for mothers, $M = 7.02$, $SD = 1.16$, range 1 – 8 (on a scale from 1 – primary education, to 8: university); for fathers: $M = 6.54$, $SD = 1.61$, range 2 – 8. Mothers' professional level was $M = 8.69$, $SD = 2.10$ (range 2 – 11), fathers': $M = 8.12$, $SD = 2.71$ (range 3 – 11), on a scale ranging from 1 (manual labor for which no education is required) to 11 (labor for which a university degree is required). Thus, based on educational and professional level, socioeconomic status of the parents of this sample was relatively high. Mothers' mean age at the time of this study was 35.83 years, $SD = 4.28$ and fathers' mean age was 38.84 years, $SD = 5.53$.

Participants of the second Dutch sample were drawn from a sample 172 families that participated in a study on anxiety in young children aged 4 to 7 years. These children had not been treated for anxiety in the past nor did they have any formal diagnosis. Children of 3-4 years ($n = 43$; 23 girls and 20 boys) were selected for this study in view of comparability in age with the Australian sample. One child was 3 years old and 42 were 4 years (birth date was not asked). Data on CPB were available for 43 mothers and 42 fathers. Families were recruited by students through convenience sampling in the community, including relatives, local contacts, and schools. The majority of parents were of Dutch origin (mothers: 91%, fathers: 95%). Educational level of the parents was fairly high: mothers $M = 6.37$, $SD = 1.51$, range 2 – 8; fathers: $M = 6.21$, $SD = 1.60$, range 2 – 8 (on a scale from 1 – primary education, to 8: university). Mothers' mean age at the time of the study was 34.65 years, $SD = 4.86$, and fathers' mean age was 37.45 years, $SD = 6.17$.

Australian Sample

Australian participants were obtained from two samples. For the first sample, data

was obtained as part of the baseline assessments of a randomised control trial (RCT) of an intervention for behaviourally inhibited children. Participants included 164 preschool children (92 girls and 72 boys) ranging in age from 3.35 to 4.81 years and their mothers and fathers (see Lazarus et al., 2016). For the second sample, data was obtained as part of a separate study that followed the same recruitment procedures used in the first Australian sample. Participants included 13 preschool children (9 girls and 4 boys) ranging in age from 3.28 to 4.64 years. The complete Australian sample consisted of 166 children (92 girls and 74 boys; 85 behaviourally inhibited, and 81 behaviourally uninhibited) for which data on CPB of one or both parents (161 mothers and 152 fathers) were available; *M* age of the children = 3.98 years, *SD* = 0.32 (range 3.28 to 4.67). Children were recruited via advertisements in a local parenting magazine and flyers distributed to local preschools. Two different advertisements were used, the first requested for ‘shy’ children, the second for ‘confident’ children. Children were selected for participation based on mothers’ ratings on the Approach subscale of the Short Temperament Scale for Children via telephone interviews (STSC; Sanson, Smart, Prior, Oberklaid, & Pedlow, 1994). The complete procedure is described in Lazarus et al. (2016).

Most mothers described the family ethnicity as being of Oceanic ethnicity (74.3%), 14.2% as Asian, 6.8% European, 2.7% American, and 2.0% African. The majority of families (73.8%) were from middle to high-income families (annual income of AUD \$80,000 or greater) and 93.9% of children were from two-parent homes. Parents’ education levels were relatively high, with 76.1% of mothers and 63.1% of fathers having an undergraduate or postgraduate degree. Mothers’ mean age at the time of the study was 36.70 years, *SD* = 4.74, and fathers mean age at the time of the study was 39.17 years, *SD* = 5.61.

Measures

Challenging Parenting Behaviour. Parents' CPB was assessed using the Challenging Parenting Behaviour Questionnaire for parents of children from 4 to 6 years (CPBQ4-6; Majdandžić et al., 2010). This questionnaire assesses the extent to which the parent encourages the child socio-emotionally and physically to exhibit risky behaviour, or behaviour that causes the child to go outside of his/her comfort-zone. The original scale included 43 items, and seven subscales of CPB: teasing, rough-and-tumble play, encouragement of risk taking, social daring, encouragement of assertiveness, competition, and parental modelling of CPB. In addition to the subscales, a total score can be constructed for an overall measure of CPB. Parents were asked to rate statements about interactions with their child (e.g., 'If my child thinks that he/she can't do something, I encourage him/her to try again') on a 5-point Likert scale (1= *Not applicable*, 5= *Completely applicable*).

The original Dutch version was translated into English by MM. This translation was checked by the University of Amsterdam's translation office. Next, the translation was discussed with the Australian research team and was adjusted slightly. A back translation was carried out by HD, JH, and a bilingual Dutch-English volunteer, and was found to be satisfactorily similar to the original Dutch version.

Prior to the main analyses, internal consistency of the measures was examined separately for fathers and mothers of each country. Items with negative or low ($< .10$) item-total correlation at the total scale or subscale level were removed. In each group, the same 4 items showed problematic item-total correlations, and these were removed (one of these items showed $> .10$ item-total correlation in Dutch fathers, but $< .03$ in Australian fathers and Dutch and Australian mothers). Following Majdandžić et al. (2015), social daring and encouragement of assertiveness were combined into one social daring scale. The resulting CPBQ4-6 questionnaire contains 39 items, and consists of six subscales: teasing (6 items), rough-and-tumble play (6 items), encouragement of risk taking (6 items), social daring (9

items), competition (5 items) and modelling (7 items). The items are presented in Table 5.1.

Reliability of the CPB total scale and subscales for Dutch and Australian parents is presented in Table 5.2. Internal consistency of the CPB total score was high for both fathers' and mothers' self-ratings in both countries. Internal consistency of the subscales was acceptable to good.

Child Anxiety Symptoms. Child anxiety symptoms were assessed using mothers' report on the Preschool Anxiety Scale (PAS; Spence, Rapee, McDonald, & Ingram, 2001) in the Australian sample, and on the Preschool Anxiety Scale – Revised (PAS-R; Edwards, Rapee, Kennedy, & Spence, 2010) in the Dutch samples. The PAS contains 28 items, and the PAS-R 30, reflecting areas broadly consistent with DSM-IV diagnostic categories; social anxiety, separation anxiety, generalised anxiety, obsessive-compulsive symptoms, and specific fears. The PAS has been found to have good construct validity, satisfactory internal consistency, and good test-retest reliability (Spence et al., 2001). The PAS-R has been found to have satisfactory internal consistency for all scales (Cronbach's α s $>.70$) across English (Edwards et al., 2010) and Dutch translations (Broeren & Muris, 2008, 2009), as well as good construct validity and stability over time (see Edwards et al., 2010). Internal consistency for the PAS/PAS-R total score was excellent; in the Australian sample: $\alpha = .94$; in the first Dutch sample .88, and in the second Dutch sample .93.

To enable comparison between the PAS and PAS-R, T-scores were calculated for total scores. T-scores for the PAS were computed using the norms provided by Spence (n.d.) based on a sample of Australian preschoolers ($N = 1368$). There is currently no normative data for the PAS-R. Consequently, separate T-score distributions were developed by creating norms from the largest published sample of the PAS-R, $N = 764$, $M = 38.4$, and $SD = 19.0$ for mother report (see Edwards et al., 2010).

Child Anxiety Disorders. In each sample, the Anxiety Disorders Interview Schedule

for *DSM-IV* Parent Version (ADIS-P-IV; Silverman & Albano, 1996) was used with mothers to assess child anxiety disorders (in the first Dutch sample, fathers were also interviewed but not used in the current study; in the second Dutch sample 64% of interviews was conducted with mother, 31% with both the father and the mother, and 4% with the father). Interviews were conducted and diagnoses assigned by trained postgraduate students in psychology or clinical pedagogics. The ADIS-P-IV has excellent interrater agreement of kappa = 1.00 for an overall anxiety diagnosis and between kappa = .80 and kappa = .93 for specific anxiety diagnoses (Lyneham, Abbott, & Rapee, 2007). Reliability for the presence of a clinical anxiety disorder was excellent in the Australian sample (kappa = .95), and in the Dutch sample (kappa = 1.00). Diagnoses were only considered 'clinical' if the severity rating was four or greater, consistent with ADIS guidelines (Silverman & Albano, 1996).

Procedure

Dutch Samples. For the first Dutch sample, the Department of Psychology's ethical approval was obtained and all participants provided written informed consent. Mothers and fathers participated in laboratory visits separately with their child, where several tasks were conducted (not used in the current study). Before the lab visit, parents received a set of questionnaires, including the CPBQ4-6 and the PAS-R, to be filled out at home individually and returned at the lab visit or by mail. ADIS interviews about the child were conducted by telephone separately with mothers and fathers (fathers' interviews were not used in the current study).

For the second Dutch sample, the ethical board of the Department of Child Development and Education of the University of Amsterdam approved the study and the participants provided written informed consent. Families were visited at their homes where ADIS interviews about themselves and their child were conducted. If one of the parents was not at home during the visit, they were revisited at a later time, or the interview was

conducted by phone. Parents were either sent questionnaires before the home visit, so they could be collected at that time; or the questionnaires were handed to the parents during the home visit, and then returned by post. The questionnaires package included, but was not limited to, the CPBQ4-6 and PAS-R reported in the current study.

Australian Sample. Macquarie University Ethics Committee approved all procedures prior to commencement. Mothers provided consent for the family and were sent links to online questionnaires. For mothers, questionnaires included demographic information, the CPBQ4-6 and the PAS. For fathers, questionnaires included demographic information and the CPBQ4-6. ADIS-P-IV interviews were conducted with mothers during a 2-hour research session at Macquarie University (sample a) and over the telephone (sample b). Participants also completed additional questionnaires as well as observational tasks that are not presented here. It is noted that fathers were not requested to complete measures pertaining to childhood anxiety (PAS and ADIS-P-IV). As fathers were not required to attend the research session, questionnaire packages were restricted to reduce time constraints for fathers and to facilitate survey completion.

Data Analysis Plan

The first aim of the study, to investigate measurement invariance of the CPBQ4-6 in Dutch and Australian parents, was explored using a series of multigroup confirmatory factor analyses (CFAs) using Mplus (Muthén & Muthén, 1998-2015). The CFAs were conducted at the subscale level, estimating the loadings of the six subscales on the latent CPB factor (see Majdandžić et al., 2015). To account for dependency between fathers and mothers, a two-factor model was specified, with one latent factor for mothers' CPB and one for fathers' CPB, each indicated by the six CPB subscales. The factors representing fathers' CPB and mothers' CPB were correlated, as were the residual factors of the corresponding subscales.

Measurement invariance was tested in three steps (e.g., see Milfont and Fischer

(2015). First, configural invariance analyses were done to examine the overall model fit and significance of factor loadings for a multigroup model with no constraints across fathers and mothers, and across countries. Configural invariance establishes whether the basic model structure is invariant across groups, indicating that the reports of mothers and fathers from different countries conceptualize CPB in the same way. Second, metric equivalence was tested by constraining factor loadings of the scales to be equal across fathers and mothers, and across countries, and by comparing the fit of models with and without the constraints. Metric invariance indicates that the strength of the relations between the subscales and the underlying CPB construct is the same across groups. Third, scalar invariance was tested by also constraining intercepts, and comparing the fit of models with and without the constraints. Scalar invariance indicates that differences between individuals on observed scores (i.e., on the subscales) can be fully explained by differences between them on the underlying common factor scores (e.g., on CPB). Thus, if scalar invariance is met, Australian and Dutch fathers and mothers who obtain the same score on for example the subscale rough-and-tumble play would have the same score on the CPB common factor score.

In case constraints resulted in significantly decreased model fit, we also tested partial measurement invariance models by removing single constraints one by one, in order to examine for which factor loadings or intercepts the invariance constraints did not hold. Lastly, we investigated the second aim of our study, namely to test the significance of differences in levels of CPB between fathers and mothers, and between countries, by also constraining the common factor means to be equal and comparing model fit.

Models were fitted using maximum likelihood estimation. Model fit of the initial configural model was evaluated using the χ^2 measure of absolute fit, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). Cut-offs of $CFI \geq .95$ and $RMSEA \leq .05$ suggest good fit and cut-offs of $CFI \geq .90$ and $RMSEA \leq .08$ suggest adequate

fit (Cheung & Rensvold, 2002; Hu & Bentler, 1998). Measurement invariance was evaluated through chi-square difference tests and Expected Cross Validation Index (ECVI) differences (Browne & Cudeck, 1992). A significant chi-square difference and a significant ECVI difference indicate a notable decrease in approximate fit. In addition, current research suggests that a negative change in the CFI of $\leq -.002$ and a positive change in the RMSEA of $\geq .007$ are indicative of notable decrement in model fit (Meade, Johnson, & Braddy, 2008; Sass, Schmitt, & Marsh, 2014).

The third aim of the study, to test the relationship between CPB and child anxiety, was achieved by including child anxiety in the final model and testing for a significant relationship with CPB. We conducted this analysis separately for anxiety symptoms and presence of an anxiety disorder. In addition, we tested whether regression coefficients of the relation between CPB and child anxiety were invariant across fathers and mothers, and across countries, by comparing the fit of models with and without equality constraints. For the model with presence of an anxiety disorder as dependent variable, a dichotomous variable, we used weighted least squares estimation.

Results

Preliminary Analyses

Of the entire sample of 312 families, 10.3% had missing values: 4 on presence of anxiety disorder, 6 on anxiety symptoms, 7 on maternal and 18 on paternal CPB. The 32 families with missing data did not differ from the other families on any of the study variables (i.e., CPB and its subscales, child anxiety, child gender, and age; all $p > .05$). Missing data are handled in MPlus by full information maximum likelihood estimation (Muthén & Muthén, 1998-2015).

All continuous measures were checked for univariate outliers, using $z < -3.29$ or $z > 3.29$ as the criterion, which were truncated to a value near the first non-outlier (Tabachnick,

Fidell, & Osterlind, 2001). Skewness and kurtosis was $< |2|$ for all measures.

To explore whether child gender should be controlled for, we tested whether boys and girls differed on anxiety and on CPB, using independent sample *t*-tests. No significant child sex differences were found in child anxiety symptoms, $t(304) = 0.38, p = .703$, or presence of anxiety disorder, $t(306) = 0.12, p = .903$. Mothers showed no differences in CPB (or its subscales) towards sons or daughters. Fathers of sons showed more competition towards their child ($M = 3.03, SD = 0.77$) than fathers of daughters ($M = 2.84, SD = 0.77$), $t(292) = 2.11, p = .036$, but no differences on total CPB or other subscales were present. Because of the few differences (1 out of 16), child gender was not further addressed.

To explore whether age should be controlled for, correlations were calculated between child age and the study variables. Higher child age was related to higher CPB of mothers and fathers (both $r_s = .24, p < .001$), and several of its subscales: teasing (mothers: $r = .24, p < .001$, fathers: $r = .22, p < .001$), rough-and-tumble play (mothers: $r = .14, p = .011$, fathers: $r = .25, p < .001$), social daring (mothers: $r = .25, p < .001$, fathers: $r = .21, p < .001$), modelling (mothers and fathers: $r = .18, p = .002$), and mothers' competition ($r = .14, p = .012$). Child age was unrelated to presence of anxiety disorder ($r = -.09, p = .127$), but higher child age was related to lower anxiety symptoms ($r = -.17, p = .003$). These age effects suggested necessity for controlling for age. Therefore, all analyses were also conducted using age as a covariate. The results were highly similar to the analyses without correcting for age, and age was uncorrelated to the common CPB factors ($r = .16$ for Dutch mothers, $.16$ for Dutch fathers, $.13$ for Australian mothers, and $.10$ for Australian fathers, all $p > .05$). Because the results were not affected by age, we report the results without using age as a covariate.

The correlation matrices for the study variables are presented in Tables 5.3 (Dutch parents) and 5.3 (Australian parents). Fathers' CPB was significantly positively correlated

with mothers' CPB (total score and across subscales) in both countries, indicating that fathers and mothers of a child tended to cohere in their level of CPB. Correlations across subscales of CPB were high and significant for fathers and mothers in both countries, indicative of high coherence among the scales. Correlations of CPB and its subscales with child anxiety symptoms showed low non-significant correlations for Dutch fathers, and low to modest correlations for Dutch mothers and Australian fathers and mothers. Almost all correlations between CPB and child anxiety were negative. Correlations of CPB with presence of anxiety disorder were low and mostly non-significant for Dutch parents, and low to modest for Australian parents. Notably, in the Australian sample, mothers' as well as fathers' rough-and-tumble play and risk taking were the only subscales significantly associated with both measures of child anxiety. The pattern for Dutch parents was less clear, with fathers' social daring being the only scale significantly associated with presence of anxiety disorders, whereas for mothers, significant negative associations were found for rough-and-tumble play, risk taking, social daring and modelling, but only with child anxiety symptoms.

Factor Structure and Measurement Invariance of CPB

We tested measurement invariance of the CPBQ across fathers and mothers, and across countries in a series of CFA models. For all models, three residual factors were allowed to correlate (identical across groups and for all models) to improve model fit.

The initial two-factor configural model showed adequate fit across countries (Table 5.5), indicating that the basic model structure of CPB does not differ between parents and countries. Configural fit was also established by significant standard factor loadings of $\geq .49$ ($p < .001$) for all scales on the factor (Table 5.6). The nested metric invariance model, with equal loadings for mothers and fathers and across countries, showed a good overall fit according to CFI and RMSEA measures (Table 5.5). Evaluation of change in model fit gave contrasting results: on the one hand a significant increase in χ^2 ($p = .023$) and a notable

decrease in CFI compared to the unconstrained model, on the other hand a negligible increase in RMSEA, and a non-significant change in ECVI (Table 5.5). Because two of these measures indicated acceptance of the model, and overall model fit of this model was good, we choose to accept the model, indicating equivalence of factor loadings across parents and countries. This means that we can be confident that the subscales of CPB hang together in the same way for mothers and fathers and for Australian and Dutch parents.

Next, we tested scalar invariance in a model nested within the metric invariance model, in which intercepts of the scales were constrained to be equal across fathers and mothers, and across countries. This scalar invariance model showed a significant increase in χ^2 ($p < .001$), a notable decrement in CFI and RMSEA fit, and a significant change in ECVI (Table 5.5), indicating that intercepts were not equal across fathers and mothers and across countries. Subsequently, we examined *partial* scalar invariance by removing constraints on intercepts one by one, going forward and backward, until we achieved good fit (Table 5.5). The final model has six intercepts that could not be constrained to be equal across groups: Given their scores on the CPB factor, Dutch fathers score higher than expected on teasing and rough-and-tumble play, Dutch mothers' score lower than expected on competition, Australian fathers score lower than expected on social daring and modelling, and Australian mothers' score higher than expected on risk taking. Thus, the final model showed invariance of all factor loadings and some intercepts. So, although the strength of the relations between the subscales and the underlying CPB construct is the same across Dutch and Australian mothers and fathers, they score differently on some subscales relative to their level of CPB.

Differences in Levels of CPB

Differences in mean level of the CPB factor between fathers and mothers, and between countries were evaluated in Mplus using the nested model approach. That is, in the final model described above, we fixed the mean of the latent CPB factor (at 0) and its

variance (at 1) using one parent/country (e.g., Dutch fathers) as a reference, in order to test whether the other groups differed from the reference on this mean level of CPB. The results showed that the difference in mean level of CPB was not significant between Dutch fathers and mothers ($d = .03$, $SE = .124$, $p = .804$), but Australian fathers scored higher than Australian mothers ($d = .52$, $SE = .117$, $p < .001$). Dutch mothers scored significantly higher on CPB than Australian mothers ($d = .48$, $SE = .135$, $p < .001$), but Dutch and Australian fathers did not differ in level of CPB ($d = .01$, $SE = .156$, $p = .932$). Thus, Australian mothers seem to express lower levels of CPB than Australian fathers and Dutch fathers and mothers.

Prediction of Child Anxiety Symptoms by CPB

The third aim of the study, to test the hypothesised negative relation between CPB and child anxiety, especially for fathers, was analysed by extending the structural equation model with the dependent variable child anxiety symptoms. Predictive relations of fathers' and mothers' CPB to child anxiety symptoms were simultaneously estimated (i.e., as two predictors) in the multigroup model with the two countries. The initial predictive model showed good fit ($\chi^2(126) = 190.28$, $CFI = .961$, $RMSEA = .057$), and revealed that only CPB of Dutch mothers was significantly related to less child anxiety symptoms ($B = -2.29$, $SE = 0.84$, $p = .006$, Dutch fathers: $B = 0.18$, $SE = 1.10$, $p = .866$, Australian mothers: $B = -2.23$, $SE = 1.50$, $p = .136$, Australian fathers: $B = -1.37$, $SE = 1.47$, $p = .352$). Next, we tested whether regression coefficients could be constrained to be equal across parent gender and countries. This model fitted the data well ($\chi^2(129) = 192.90$, $CFI = .961$, $RMSEA = .056$). Model comparison revealed no significant increase in χ^2 ($p = .455$) compared to the initial predictive model, and no change in ECVI ($\Delta ECVI = -.011$, 90 CI: $-.010$, $.015$). Thus, regression coefficients could be constrained to be equal across all four groups. The regression coefficient was negative and significant ($B = -1.63$, $SE = 0.41$, $p < .001$). Thus, when tested as simultaneous predictors, fathers' and mothers' CPB predict significantly less child anxiety

symptoms, both in Australia and in the Netherlands.

Prediction of Presence of Child Anxiety Disorders by CPB

The same approach was used to test predictive relations of fathers' and mothers' CPB towards presence of child clinical anxiety diagnosis. The initial predictive model, in which predictive paths for each of the four groups was freely estimated, showed good fit ($\chi^2(48) = 60.35$, CFI = .951, RMSEA = .041). In this model, only higher CPB of Australian mothers predicted smaller risk for child anxiety disorder, at trend level (B = -0.22, SE = 0.13, $p = .098$; Australian fathers: B = -0.07, SE = 0.13, $p = .587$, Dutch mothers: B = -0.16, SE = 0.14, $p = .237$, Dutch fathers: B = -0.14, SE = 0.18, $p = .455$). The model with regression coefficients constrained to be equal across parent gender and countries fitted the data well ($\chi^2(44) = 49.75$, CFI = .977, RMSEA = .029). The good fit of this model showed that the regression coefficient could be constrained to be equal across all four groups and was significantly negative (B = -0.15, SE = 0.05, $p = .004$). Thus, the final model revealed that both Australian and Dutch fathers' and mothers' CPB predict a significantly smaller risk for child anxiety disorders.

Discussion

The primary aim of the current study was to evaluate the measurement invariance of the CPBQ4-6 across mothers and fathers, and across Dutch and English language countries. The second aim was to establish whether levels of CPB differed across mothers and fathers, and across countries. The third aim was to examine whether parents' CPB predicted less child anxiety at both the symptom and disorder level. This is the first study to establish the measurement invariance of a measure of CPB across countries, and it was anticipated that, if invariant, results of this study would allow for the cross-cultural comparison of findings for the relatively limited literature available in this area to date.

The results revealed equivalence of factor structure and factor loadings of the

CPBQ4-6 across mothers and fathers, and across countries, and a pattern of significant subscale-factor loadings for all groups. This demonstrates that the subscales of the CPBQ4-6 cohere well and load meaningfully onto a single factor, regardless of parent sex or parent country. Further, there is no evidence that some scales have a stronger contribution to the latent CPB factor than others across mothers and fathers, and across countries. The subscales thus appear to reflect meaningful subcomponents of CPB. These results are in line with the equivalence of factor structure and factor loadings found across fathers and mothers at 1 and 2.5 years with earlier age versions of the CPBQ (Majdandžić et al., 2015). Our results extend the results of Majdandžić et al. (2015) in that we demonstrate equivalence of factor structure in 4-year-olds and across different countries in addition to fathers and mothers. This supports the notion of Fagan, Day, Lamb, and Cabrera (2014) that parenting constructs are the same for fathers and mothers, and that this also holds for CPB. In sum, these results are encouraging in that we can be confident about the factor structure of the CBPQ4-6 for use with fathers and mothers in different Western countries.

Subsequent analyses identified partial scalar invariance at the intercept level whereby six out of 24 intercepts could not be constrained to be equal across groups. Whilst the partial scalar invariance model showed good fit, the necessity to free six intercepts to achieve this model demonstrated that there are some important differences that may need to be explored in future studies. For example, whilst Dutch mothers' and Australian mothers' and fathers' scores on the teasing and rough-and-tumble play scales of the CPBQ4-6 may be considered invariant (allowing comparison of these intercepts across these three groups), Dutch fathers reported more rough-and-tumble play than the other groups of parents, relative to their total CPB. Likewise, Australian mothers endorsed greater encouragement of children's participation in taking risks, relative to their general CPB than the other three groups. These non-invariant parameters thus displayed some differential functioning across countries and

across parent sex at the intercept level. Non-invariance of intercepts may be indicative of potential measurement bias and suggests that there may be cultural and parenting differences that are influencing the way these parents respond to these subscales, and thus should be investigated in future studies using this measure.

We then explored differences in the mean level of the CPB factor between mothers and fathers and between countries, where it was found that Australian mothers seemed to report lower levels of CPB than Australian fathers and Dutch parents. The effect sizes of these comparisons were of medium strength. We had no specific hypotheses regarding cultural differences and these preliminary results require confirmation through subsequent studies with a larger sample size. This result for Australian mothers could be interpreted within the context of the theoretical underpinnings of this parenting behaviour whereby Bögels and Phares (2008) suggest that CPB is an important parenting behaviour which may be more characteristic of fathers' parenting. However, this does not explain why Dutch mothers were found to be similar in their reporting of CPB to Dutch and Australian fathers. Whilst CPB is hypothesised to be particularly salient for fathers, mothers have also been found to engage in this type of parenting behaviour (Lazarus et al., 2016; Majdandžić et al., 2015). Previous studies found equal levels of self-rated CPB for Dutch mothers and fathers of 1-year-olds (Möller et al., 2014), more observed CPB of Dutch fathers than mothers of 2- but not 4-year-olds (Majdandžić et al., 2014), equal observed and self-rated CPB of Dutch mothers and fathers of 4-month-olds and 1-year-olds, but more self-rated paternal than maternal CPB at 2.5 years old (Majdandžić et al., 2015). Together with the current results, these studies suggest that differences between Dutch fathers and mothers in CPB may be largest in toddlerhood, the age when physical play peaks (Leavell, Tamis-LeMonda, Ruble, Zosuls, & Cabrera, 2012). The finding that fathers of 3- to 4-year-olds show more CPB than mothers in Australia but not in the Netherlands may be due to smaller gender role

differentiation in the Netherlands compared to other Western countries, as reflected by the Netherlands scoring lower on masculinity than Australia (Hofstede, Hofstede, & Minkov, 2010).

Apart from the structure and measurement of CPB, an important issue is the functional relevance of this novel construct. The initial models revealed that for child anxiety symptoms, only CPB from Dutch mothers was related to significantly less child anxiety, and for child anxiety disorders, only a trend was identified for CPB from Australian mothers. However, constraining the regression coefficients to be equal resulted in increased power, and the final model, that fitted for all groups, revealed that at both the symptom and disorder level, CPB was related to significantly less child anxiety for Dutch and Australian mothers and fathers. These negative relations between CPB and clinical measures of child anxiety, irrespective of parent gender and country, illustrate the potential clinical relevance of CPB.

Accumulating research in this area supports the idea that CPB exhibited by the father may act as a protective mechanism, but the relationship for mothers is less clear. For example, the findings from studies discussed earlier by Majdandžić et al. (2014) and Möller et al. (2014) suggest that fathers' CPB is associated with less anxiety in both infants and 4-year-old children, whereas mothers' CPB may have a positive association such that greater CPB from mothers was associated with greater child anxiety. The findings of the current study partly point in the opposite direction for mothers, because the initial and final models show a significant negative association with child anxiety for mothers' CPB. This may be due to the fact that both mothers' CPB and child anxiety were obtained from maternal reports. For fathers' CPB, negative associations between CPB and child anxiety were found only in the final models when testing equivalence of regression coefficients across groups. To summarize, the literature on this newly evaluated construct appears to offer disparate results for the relations of mothers' CPB with child anxiety. The findings for fathers' CPB are more

clear-cut and suggest a negative association between paternal CPB and child anxiety, in infancy, toddlerhood and, as revealed in the current study, at preschool age. However, further research into this construct is warranted in order to enhance understanding of the interparental differences of both mothers' and fathers' CPB and the relationship of CPB towards anxiety in offspring.

This study provides an important step forward in terms of identifying a measure of CPB that is appropriate for use with parents of preschool-aged children from The Netherlands and Australia, and potentially in other English-speaking countries. The results identified CPB as a multifaceted and coherent construct. Most importantly, this study provides further answers with respect to this parenting behaviour and its protective role towards childhood anxiety. A clear strength of the current study was the consistency across the samples in the measures of anxiety and of CPB, as well as similarity in the developmental stage of the children. However, a number of limitations require attention. First, the cross-sectional design of the current study means that it is not possible to delineate cause and effect; whilst it is possible that greater CPB predicts less child anxiety, it is also possible that a child that is less anxious elicits more physical engagement and risky-stimulation from their parent. Second, an important limitation requiring acknowledgement is the shared method variance from mothers. This study was conducted with pre-existing data, and unfortunately in the Australian samples only maternal report of child anxiety symptoms and diagnoses was obtained. Whilst child anxiety data was obtained from fathers in the Dutch samples, in order to achieve consistency in measures used we also wished to have consistency of reporters and consequently chose to rely on mother-report of child anxiety. Future studies should try to obtain both maternal and paternal report of child anxiety. Third, the method of recruitment was not consistent across samples. The Australian sample utilised an extreme-groups design in order to recruit children that were behaviourally inhibited and behaviourally uninhibited. Consequently, findings

should be interpreted in light of this inconsistency, for example, this design may have contributed to some of the differences obtained such as the lower report of CPB from Australian mothers. As has been mentioned the current study utilised existing data, consequently consistency in recruitment could not be assured. Future studies should try to obtain consistency in recruitment method. Fourth, there remains uncertainty as to why partial scalar invariance was obtained at the level of intercepts. Consequently, it would be particularly valuable to examine the specific sub-components of CPB (e.g., teasing, risk taking, rough-and-tumble-play) within larger samples, to explore whether there are any underlying cultural or parent gender differences here.

This is the first study to establish the measurement invariance of a measure of CPB for 4- to 6-year-olds. The findings of the present study contribute to a growing body of research examining the function of this parenting behaviour in terms of its potential protective role against childhood anxiety. This study confirmed the factor structure of the CPBQ4-6, and overall the measure is considered a coherent measure for the assessment of CPB in parents of preschool-age children. Larger studies are required in order to further investigate the cross-country and cross-parent gender invariance at the level of intercepts, and studies obtaining paternal report of child anxiety in addition to maternal report will be beneficial to the field. The current study highlights the importance of examining measurement invariance before testing hypotheses regarding mothers' and fathers' parenting behaviours and their relationship towards childhood anxiety disorders.

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Table 5.1

Scales and Items of the CPBQ4-6 for Parents of 4 to 6-Year-Old Children

Number of items: 39	Item number
Teasing (6)	
I play little tricks on my child.	1
I splash my child when we're in the swimming pool.	8
I almost never pull my child's leg. [reversed]	15R
I regularly tease my child for fun.	22
As a prank, I sometimes scare my child for fun, for instance by popping up unexpectedly.	29
I pretend that I'm going to eat my child's sweets, for example his/her cookies or dessert.	34
Rough-and-tumble play (6)	
I play boisterously with my child.	2
I almost never play rough and rowdy games with my child. [reversed]	9R
I sometimes play a game with my child in which I spin him/her around.	16
I enjoy having pillow-fights with my child.	23
I enjoy tickling my child.	30
I sometimes play 'tag' with my child: I chase after him/her and say in a low voice that I'm going to grab him/her.	35
Encouragement of risk taking (6)	
I encourage my child to do exciting things, such as jumping off high objects or climbing higher than he/she dares.	3
If my child finds something scary, I encourage him/her to carry on regardless.	10
If I see something that is new or exciting to my child, I encourage him/her to approach it.	17
In the bath or in the swimming pool, I encourage my child to duck his/her head under water.	24
I encourage my child to gain new experiences by, for example, eating something new or playing a new game.	31
If my child thinks that he/she can't do something, I encourage him/her to try again.	32

Social Aspects of CPB (9)

If my child comes to me because he/she is having a minor quarrel, I make him/her sort it out it by himself/herself.	4
I encourage my child to approach unfamiliar people to ask them something.	5
I encourage my child to ask for himself/herself whether another child wants to play with him/her.	11
I encourage my child to say no if he/she doesn't want something	12
I encourage my child to perform for an audience by, for example, singing a song, dancing, or doing something sporty.	18
If my child wants to go on the see-saw or the swing, I let him/her ask for himself/herself if he/she may go on it.	19
I encourage my child to stay the night with a friend.	25
I encourage my child to stand up for himself/herself.	26
If another child snatches something from my child, I encourage my child to get it back.	36

Competition (5)

When I play tag with my child, I make myself hard to catch.	6
I encourage my child to be the best.	13
I challenge my child to contests, for instance running races or arm wrestling.	20
I encourage my child to compete against other children.	27
I urge my child on when he/she is competing against other children	38

Modelling (7)

I show my child how I stand up for myself.	7
My child often sees me approach unfamiliar people.	14
My child sometimes sees me tease others.	21
My child regularly sees me in situations in which I try to win games and competitions.	28
My child sometimes sees me horsing around (play boisterously/rough-and-tumble play) with others.	33
I show my child that I take risks.	37
I show my child that I engage with situations that I find exciting or scary.	39

Table 5.2

*Reliability (Cronbach's alpha) of the Questionnaire Scales of Challenging Parenting**Behaviour*

Scale	Australian sample			Dutch sample	
	items	Mother	Father	Mother	Father
CPB total score	39	.90	.91	.92	.91
Teasing	6	.63	.76	.76	.80
Rough-and-tumble play	6	.73	.71	.84	.79
Encouragement of risk taking	6	.65	.68	.72	.76
Social daring	9	.69	.68	.69	.69
Competition	5	.69	.74	.77	.70
Modelling	7	.73	.73	.78	.74

Note. CPB total score = higher order scale CPB.

Table 5.3

Bivariate Correlations between Study Variables for the Dutch Sample

Variable	1	2	3	4	5	6	7	8	9
1. Child anxiety symptoms	-	.42 ^{***}	-.16 ⁺	-.26 ^{**}	-.17 [*]	-.20 [*]	-.14 ⁺	-.22 [*]	-.25 ^{**}
2. Child presence of AD	.42 ^{***}	-	-.10	-.10	-.05	-.14 ⁺	-.08	-.16 ⁺	-.14 ⁺
3. Teasing	-.03	-.01	.41^{***}	.62^{***}	.46^{***}	.38^{***}	.57^{***}	.53^{***}	.77^{***}
4. Rough-and-tumble play	-.16 ⁺	-.12	.60^{***}	.36^{***}	.51^{***}	.47^{***}	.46^{***}	.62^{***}	.80^{***}
5. Encouragement of risk taking	-.17 ⁺	-.07	.38^{***}	.40^{***}	.28^{**}	.66^{***}	.42^{***}	.62^{***}	.78^{***}
6. Social daring	-.14 ⁺	-.19 [*]	.26^{**}	.32^{***}	.65^{***}	.30^{***}	.39^{***}	.53^{***}	.74^{***}
7. Competition	.00	.03	.57^{***}	.46^{***}	.38^{***}	.41^{***}	.20[*]	.49^{***}	.70^{***}
8. Modelling	.02	-.09	.46^{***}	.39^{***}	.48^{***}	.47^{***}	.46^{***}	.29^{**}	.83^{***}
9. Total CPB	-.11	-.11	.75^{***}	.72^{***}	.74^{***}	.71^{***}	.73^{***}	.75^{***}	.39^{***}

Note. Correlations for fathers' CPB are below the diagonal (lower left), and for mothers' CPB are above the diagonal (upper right), correlations on the diagonal are between fathers and mothers (bold for readability). AD = Anxiety disorder.

*** $p < .001$. ** $p < .01$. * $p < .05$. + $p < .10$.

Table 5.4

Bivariate Correlations between Study Variables for the Australian Sample

Variable	1	2	3	4	5	6	7	8	9
1. Child anxiety symptoms	-	.74 ^{***}	-.08	-.21 ^{**}	-.22 ^{**}	-.13	-.08	-.10	-.18 [*]
2. Child presence of AD	.74 ^{***}	-	-.05	-.16 [*]	-.22 ^{**}	-.17 [*]	-.07	-.09	-.17 [*]
3. Teasing	-.17 [*]	-.08	.24^{**}	.69 ^{***}	.36 ^{***}	.28 ^{***}	.44 ^{***}	.44 ^{***}	.70 ^{***}
4. Rough-and-tumble play	-.20 [*]	-.21 ^{**}	.66 ^{***}	.34^{***}	.51 ^{***}	.32 ^{***}	.33 ^{***}	.50 ^{***}	.75 ^{***}
5. Encouragement of risk taking	-.19 [*]	-.20 [*]	.43 ^{***}	.49 ^{***}	.43^{***}	.66 ^{***}	.41 ^{***}	.56 ^{***}	.77 ^{***}
6. Social daring	-.09	-.03	.47 ^{***}	.45 ^{***}	.64 ^{***}	.36^{***}	.52 ^{***}	.56 ^{***}	.75 ^{***}
7. Competition	-.14 ⁺	-.05	.55 ^{***}	.37 ^{***}	.42 ^{***}	.61 ^{***}	.35^{***}	.53 ^{***}	.75 ^{***}
8. Modelling	-.10	.02	.56 ^{***}	.42 ^{***}	.50 ^{***}	.65 ^{***}	.54 ^{***}	.37^{***}	.80 ^{***}
9. Total CPB	-.19 [*]	-.11	.80 ^{***}	.73 ^{***}	.73 ^{***}	.83 ^{***}	.74 ^{***}	.80 ^{***}	.40^{***}

Note. Correlations for fathers' CPB are below the diagonal (lower left), and for mothers' CPB are above the diagonal (upper right), correlations on the diagonal are between fathers and mothers (bold for readability). AD = Anxiety disorder. CPB = Challenging parenting behaviour

*** $p < .001$. ** $p < .01$. * $p < .05$. + $p < .10$.

Table 5.5

Summary of Model Fit Statistics for Cross-Parent and Cross-Country Measurement Invariance for the Challenging Parenting Behaviour Questionnaire

	$\chi^2(df)$	CFI	RMSEA	$\Delta\chi^2(\Delta df)$	Δ CFI	Δ RMSEA	Δ ECVI	90 CI Δ ECVI
Configural invariance	125.84 (82)	.973	.059					
Metric invariance: equal loadings across all groups	153.69 (97)	.965	.061	27.84 (15)*	-.008	.002	-.007	-.043, .054
Scalar invariance: equal intercepts across all groups	374.37 (112)	.839	.123	220.69 (15)***	-.126	.062	.615	.472, .782
Partial scalar invariance	169.17 (106)	.961	.062	15.49 (9)	-.004	.001	-.008	-.029, .040

Note. χ^2 : chi-square measure of absolute fit, CFI: Comparative fit index, RMSEA: Root mean square error of approximation. ECVI: Expected Cross

Validation Index. Configural invariance: Evaluation of model structure without constraints across groups. Metric equivalence: Factor loadings equal across groups; Scalar invariance: Intercepts of observed variables equal across groups.

*** $p < .001$. * $p < .05$.

Table 5.6

Standardised Factor Loadings of the Configural Model of the Scales of the Challenging Parenting Behaviour Questionnaire

Scale	Dutch		Australian	
	Mothers	Fathers	Mothers	Fathers
Teasing	.65	.61	.49	.62
Rough-and-tumble play	.73	.63	.58	.58
Encouragement of risk taking	.73	.65	.70	.69
Social daring	.63	.62	.71	.84
Competition	.60	.67	.65	.70
Challenging modelling	.84	.70	.80	.76

Note. Results are based on the initial configural multigroup CFA model without constraints.

All loadings are significant at $p < .001$.

Chapter 6.
General Discussion

Overview

Challenging Parenting Behaviour (CPB) is a novel parenting construct initially proposed by Bögels and Phares (2008). CPB encompasses the playful encouragement of children to engage with objects, situations, or people they may find scary or novel, and further, CPB encompasses the modelling of this behaviour by the parent, demonstrating parental approach to novelty, feared objects, or trying new things, without feeling frightened (Majdandžić, Möller, de Vente, Bögels, & van den Boom, 2014). In addition to the modelling of this behaviour by the parent, CPB consists of a number of sub-components, including: encouragement of safe risk-taking, rough-and-tumble play, promoting social daringness or assertion, playful teasing, and competing with the child (Majdandžić, de Vente, & Bögels, 2015). It is through these behaviours that this parenting construct has been theorised to be potentially important in the protection against child anxiety (Bögels & Perotti, 2011; Bögels & Phares, 2008). Bögels and Phares (2008) highlighted the lack of research examining the paternal role, and offered a theoretical rationale for the role of fathers towards childhood anxiety beyond the traditionally-examined parenting domains of rejection and control.

This thesis focussed on addressing a gap in the literature by contributing a body of empirical research examining fathers' parenting in the context of childhood anxiety. In addition, this thesis aimed to investigate the role of fathers' CPB and its association with child anxiety through both the psychometric evaluation of measures used to assess CPB, and, an examination of the relationship between CPB and child anxiety across symptom and diagnostic measures of anxiety. Where possible, parental anxiety and child gender were also taken into account when evaluating the association between CPB and offspring anxiety. In this final chapter, an overview of the key findings of the studies included in this thesis are presented, followed by a discussion of the theoretical, research, and clinical implications of this body of work. Finally, the main conclusions of this thesis are presented.

Review of Thesis Papers and Outcomes

Chapter 2: Recalled Challenging Parenting Behaviour and Anxiety in

Adulthood: A Retrospective Cohort Study

Recalled parenting behaviours such as rejection and control have frequently been linked to current adult (offspring) psychopathology, and, several empirical studies have shown that adults who recall the parenting they received in childhood as more rejecting or controlling report greater levels of current anxiety (Gerlsma, Emmelkamp, & Arrindell, 1990). Whilst retrospective methodology has been a common approach in the parenting literature to establish the types of parenting behaviours received by anxious adults, the novel parenting construct of Challenging Parenting Behaviour (CPB) has not yet been examined in this way. Consequently, Chapter 2 was the first study to examine whether recollections of CPB experienced during childhood (ages 7 – 12), were associated with current adult anxiety. In addition, Chapter 2 also sought to examine the underlying factor structure of recalled CPB via Exploratory Factor Analysis (EFA), and to assess possible differences between recalled CPB in mothers and fathers.

The EFA identified three latent constructs underlying adults' recall of CPB received during childhood: parental encouragement of social assertion ('Social'), parental encouragement to engage in novel or new situations ('Novelty'), and intentional teasing ('Teasing'). All three factors demonstrated good internal consistency. In line with the theoretical literature for this parenting construct, which suggests that CPB may hold a protective role towards child anxiety (Bögels & Perotti, 2011; Bögels & Phares, 2008), it was hypothesised that adults who recalled experiencing greater levels of CPB during childhood would report lower levels of current anxiety. Findings for mothers' and fathers' Social and Novelty CPB were in the hypothesised direction, whereby greater encouragement of social assertion or engagement with novelty by parents during childhood was associated with lower

report of current adult anxiety. Although in the hypothesised direction and significant, the effect sizes were small.

In contrast to our hypotheses, greater levels of fathers' Teasing CPB predicted higher levels of current adult anxiety. Upon closer examination of the items in the 'Teasing' subscale, this finding is not particularly surprising. The items that remained following the EFA appeared to offer negative undertones towards this aspect of parenting, and may have been construed as a negative aspect of parenting by participants (e.g. "my mother/father would regularly tease me for fun" and "as a prank my mother/father would sometimes give me a real scare"). Following the EFA, several items of this subscale were removed, the items that remained on this 'reduced' subscale offer a different interpretation of this construct than intended, as the purpose of this measure was to communicate aspects of parenting that involve fun and playful socio-cognitive engagement with children (Majdandžić et al., 2015). On reflection, it is not surprising that children who recalled their parents, particularly their fathers, as intentionally teasing towards them (in a negative manner), reported more current adult anxiety. This pattern of findings mirrors the direction of results obtained in the retrospective literature: negative parental rearing behaviours such as rejection and control are positively associated with increased adult anxiety (Arrindell, Emmelkamp, Monsma, & Brilman, 1983; Parker, 1979; Perris, Jacobsson, Linndström, Knorring, & Perris, 1980). For example, Grüner, Muris, and Merckelbach (1999) found that perceived negative aspects of parenting, such as parental rejection, was found to be related to greater anxiety symptoms in children. In addition, the finding that adults recalled greater intentional teasing from their fathers compared to their mothers is consistent with recent findings that fathers are perceived by offspring as more rejecting or less accepting than mothers (Miranda, Affuso, Esposito, & Bacchini, 2016).

An additional and important finding of this paper was the similar levels of mothers' and fathers' CPB recalled by adults. To clarify, we compared mean level differences in adults' recall of their mothers' and fathers' encouragement of social assertion, and encouragement to engage in novel or new situations, and found no significant differences between parent gender in these components of CPB. Bögels and colleagues proposed that CPB is a parenting domain of particular importance for fathers (Bögels & Perotti, 2011; Bögels & Phares, 2008) yet the research presented in this chapter indicated that mothers and fathers did not differ in the degree to which they challenged their children to take risks through engaging in new experiences and being socially self-assured or assertive. The findings from this chapter support findings obtained by Majdandžić et al. (2015) who concluded that overall, mothers and fathers displayed similar CPB towards children in early and late infancy.

Taken together, the results of Chapter 2 imply that adults who recall more negative aspects of paternal parenting, such as intentional teasing, report greater current anxiety. Adults who recall more positive aspects of parenting such as the encouragement of social assertiveness or the encouragement to new things and experiences, report less current anxiety. However, the association between negative aspects of parenting and current adult anxiety was stronger than that for positive aspects of recalled parenting. In addition, this Chapter provided evidence to suggest that both paternal *and* maternal CPB are areas for further investigation.

Chapter 3: The Relationship between Challenging Parenting Behaviour and Childhood Anxiety Disorders

Building on the findings from Chapter 2, and stepping away from retrospective analysis, this chapter aimed to examine whether *concurrent* CPB was associated with current child anxiety. CPB was assessed in parents of preschool aged children, rather than the

previous study which examined CPB during 8-12 years of age. In this chapter, child anxiety was examined at both the symptom and diagnostic level. As findings from Chapter 2 indicated that both paternal and maternal CPB may be associated with child anxiety, both caregivers' reports of CPB were included in this study, however, drawing from the theoretical literature, we hypothesised that fathers would report greater CPB than mothers. Overall, the findings from this study demonstrated that for preschool aged children, fathers reported more CPB than mothers, and, both mothers' and fathers' CPB was associated with lower report of child anxiety symptoms, confirming our hypotheses. However, when child anxiety diagnosis was included as the outcome, only maternal CPB was identified as a significant predictor variable. It is important to note that an error was identified in the interpretation of this latter finding, it was initially suggested that the significant result meant that maternal CPB was able to predict decreased risk for child anxiety diagnosis. This interpretation is incorrect, the results actually suggest a very small predictive effect with a small percent of variance explained. Consequently, it would not be possible to use maternal CPB to distinguish between children with and without an anxiety disorder. The findings with respect to parental differences in CPB and the inconsistency in the relation between CPB and child anxiety will be discussed.

First, Chapter 3 found that fathers reported greater CPB than mothers, in support of the hypothesis and the theoretical literature for CPB. This finding appears to contrast the results of Chapter 2, where, for factors believed to be more conceptually related to CPB, it was found that adults recalled similar levels of CPB across mothers and fathers. This apparent discrepancy across chapters may be explained in consideration of methodological and/or developmental differences. For example, in Chapter 3 the total score on a measure of CPB was used, whereas in Chapter 2 mothers' and fathers' CPB was compared across three subdomains of CPB. In addition, recalled or perceived parental CPB reported by the offspring

was assessed in Chapter 2, whereas in Chapter 3, estimations of parental CPB were obtained through parent-self report. Further, Chapter 2 utilised a sample of adults recalling their parenting experiences when they were between the ages of 7 to 12, whereas Chapter 3 examined parents of preschool-aged children (aged 3 to 4.5 years), consequently CPB was assessed across different developmental periods. The differences obtained between mothers' and fathers' CPB in Chapter 3 appear to contrast the findings obtained by (Majdandžić et al., 2015) and (Möller, Majdandžić, & Bögels, 2015), who obtained inter-parental similarities in CPB, when examined in infancy. However, the findings of the present study support findings from the same study by Majdandžić et al. (2015) which suggested that fathers' CPB may be stronger than mothers' CPB in toddlerhood. Majdandžić et al. (2015) made remarks to suggest that mother-father differences in CPB may change over child development, suggesting an absence in differences in early infancy, but an observable difference in toddlerhood through the increase in rough-and-tumble play. The authors further suggest that a combination of increased parent-child physical play (suggested to peak at the preschool age), and father-mother differences in physical play (see Carson, Burks, & Parke, 1993; Leavell, Tamis-LeMonda, Ruble, Zosuls, & Cabrera, 2012; Paquette, 2004), may be linked to increased differences in CPB in the preschool years. As the study reported in Chapter 3 examined parenting during the preschool years, the finding that fathers reported greater CPB than mothers may be reflective of the developmental period of the children who were at an age where physical aspects of CPB, such as rough-an-tumble play, are suggested to peak.

Second, although maternal and paternal CPB were both shown to be significantly related to lower report of child anxiety symptoms, paternal CPB was not significantly associated with child anxiety diagnosis, whereas a significant association was obtained for maternal CPB. This finding was unexpected. However, this was the first study to examine the relationship between CPB and child anxiety using a clinical diagnostic tool in contrast to

observed or parent-reported methods assessing child anxiety. It may be that paternal CPB is more strongly related to child anxiety at the symptom-level. An alternative, explanation may lie in the measurement of CPB, here CPB was measured using the total score of a questionnaire, however perhaps there are subdomains of CPB that may be particularly salient for fathers such as rough-and-tumble play or the encouragement of risk-taking. As discussed previously, it may be that these more physically-oriented aspects of CPB are more salient for fathers of children of this developmental period. Further, an acknowledged limitation of this study was that diagnostic interviews for child anxiety were conducted solely with the child's mother, and consequently the finding that only maternal CPB was linked to child anxiety disorder may reflect shared method variance. As Chapter 3 was the first empirical study to assess the impact of CPB on child anxiety diagnosis, replication of this effect is required.

Research investigating the parenting constructs of rejection and control towards child anxiety has suggested that parental anxiety may impact this relationship, such that if a parent is anxious this may elicit more overprotective or controlling parenting strategies than parents without anxiety (Bögels & van Melick, 2004; Creswell, Murray, Stacey, & Cooper, 2011). Further, Bögels and Phares (2008) have suggested that if the paternal role is to engage in CPB, paternal anxiety may impact this relationship. Consequently, we hypothesised that parents who report higher levels of anxiety will report lower levels of CPB. In contrast to expectations, parental anxiety was not related to CPB. As this was the first study to investigate this relationship, conclusions are preliminary and the results require replication, however, perhaps CPB may be a parenting construct that is fairly robust against parental anxiety. Alternatively, perhaps the utilisation of parental self-report for current anxiety masked potential relationships such as past history of anxiety disorders. Another possibility raised by Hudson and Rapee (2002), is that given research has suggested high rates of anxiety disorders in parents of anxious children (Last, Hersen, Kazdin, Francis, & Grubb, 1987),

parents may potentially be underreporting their own levels of anxiety. Together, these factors may have impacted the relationship between parent anxiety and CPB.

Further, there has been some suggestion in the literature that some aspects of CPB, such as parental encouragement of risk-taking, may be elicited to different extents depending on the gender of the child (e.g., that parents may encourage more risk-taking in their sons than their daughters see (Morrongiello & Dawber, 2000)). Accordingly, the study presented in Chapter 3 also explored the impact of child gender on the relationship between CPB and child anxiety, however, obtained no indication that child gender impacted this relationship. Thus, the findings of this study suggest that mothers and fathers may engage in CPB to a similar extent with their sons and daughters of preschool age. It remains to be investigated whether the similarity in levels of CPB towards male and female children reported by parents is purely a reflection of the developmental stage of the children. However, the findings of the present study also support those obtained (in different developmental stages: infancy and toddlerhood) by Majdandžić et al. (2015), who found no significant differences between boys and girls with respect to parental CPB across parent-report and observational assessments of CPB. Therefore, it could be that mothers and fathers are relatively egalitarian in their use of CPB to their sons and daughters.

Overall, results of Chapter 3 suggest that CPB from both parents was related to less child anxiety at the symptom level. Whereas, when a diagnostic measure of anxiety was included, maternal CPB was related to child anxiety diagnosis but not paternal CPB. Neither parental anxiety nor child gender appeared to impact parental CPB.

Chapter 4: Fathers' Challenging Parenting Behaviour and Anxiety towards Childhood Anxiety Disorders: A Novel Computer Task

Chapter 3 recommended that future research explores methods other than parental self-report to assess CPB, and to assess different sub-components of CPB for fathers such as

the encouragement of risk-taking or rough-and-tumble play. Further, emerging research examining CPB has provided evidence suggesting that CPB may be significantly related to anxiety precursors, such as behavioural inhibition (BI) (see Möller, Nikolić, Majdandžić, & Bögels, 2016). Consequently, Chapter 4 examined CPB at the sub-domain level, and, developed a novel computer task to assess paternal CPB during children's participation in a risk-taking task. In addition to examining the relationship between CPB and its sub-components with child anxiety, this paper examined the relationship between CPB and inhibited temperament, as well as the relationship between paternal anxiety and CPB.

This paper found no evidence of a relationship between paternal CPB and BI, nor between paternal anxiety and CPB. CPB when measured with the novel computer task was not related to child anxiety across symptom, diagnostic, nor state measures of anxiety. However, children were found to take more risks during the computer task when playing with their father compared to when playing alone, suggesting that fathers may activate risk-taking in their children (Paquette, 2004; Paquette & Bigras, 2010), and, providing support to the notion that examining CPB at the sub-domain level may be beneficial. Further, when paternal CPB was measured via self-report questionnaire, fathers of children diagnosed with an anxiety disorder reported engaging in less rough-and-tumble play than fathers of children without an anxiety disorder, this again supported the value of examining the sub-components of CPB, as this information would have been lost if solely the composite score for CPB was utilised.

Whilst several avenues for the further development of the measures used to assess CPB were discussed, overall the findings of this paper suggest that examining CPB at the subdomain level is an important avenue for future investigation. Specifically, this study indicated that the subdomains of rough-and-tumble play and the encouragement of safe risk-taking are worthy avenues for future investigation.

Chapter 5: The Structure of Challenging Parenting Behaviour and Associations with Anxiety in Dutch and Australian Children

Empirical studies examining CPB to date have emerged from two sources: the studies included in this thesis, conducted in Australia, and the work conducted in the laboratory of Professor Susan Bögels and colleagues in The Netherlands, who developed this construct (Majdandžić et al., 2015; Majdandžić et al., 2014; Möller et al., 2015). Findings obtained utilising the Dutch samples to-date appear to offer a stronger argument for the role of fathers' CPB as a protective parenting behaviour towards child anxiety compared to those included in this thesis, in addition there appear to be differences in terms of maternal CPB between the Netherlands and Australia. For example, in the recent meta-analysis by Möller et al. (2016), it was reported that fathers' CPB was related to less child anxiety, whereas it was concluded that maternal CPB was not related to child anxiety. Diversely, the research presented in Chapters 2, 3, and 4 of this thesis suggests that greater maternal CPB is related to less offspring anxiety at both the symptom and diagnostic level. These differences may be a result of differing methodologies used to assess both CPB and child anxiety, different ages and stages of development of the child populations sampled, or alternatively may reflect differences across countries in the use of CPB. Consequently, Chapter 5 attempted to address these concerns through the assessment of measurement invariance of the parent-report questionnaire CPBQ4-6 (Majdandžić, de Vente, & Bögels, 2010), used in Chapters 3 and 4 of this thesis. In addition, assessments of anxiety symptoms and disorders that were comparative across samples were utilised. Measurement invariance across fathers and mothers, and across countries was expected, and it was anticipated that fathers would rate themselves higher on CPB than mothers across countries. In addition, we predicted that parental CPB would be associated with less child anxiety across at both the symptom and disorder level.

Overall, the findings of this study were promising in that the CPBQ4-6 displayed equivalence in factor structure and factor loadings across parent gender, and across countries. Suggesting that the subscales of the measure cohere well and load meaningfully onto a single CPB factor, regardless of parent gender or country, implying that the subscales of CPB reflect meaningful subcomponents of CPB. However, it was the assessment of partial scalar invariance that some differences arose. In order to achieve model fit, some intercepts needed to be freed indicating some variance at the level of intercepts. Thus, whilst Dutch and Australian mothers' and fathers' CPB displayed equivalence in factor structure and loadings, they differed in the scores obtained on some subscales relative to their overall level of CPB. For example, Dutch fathers reported greater levels of rough-and-tumble play than the other groups whereas Dutch mothers' and Australian mothers' and fathers' levels of rough-and-tumble play displayed equivalence. These differences at the level of intercepts may explain some of the differences obtained cross-culturally in the studies examining this construct, however to date these conclusions are preliminary, requiring replication with a larger sample size, and with samples recruited in the same method. For example, the Australian sample utilised an extreme groups design which differed to the recruitment method for the Dutch sample. Additionally, when the relationship between CPB and child anxiety was examined, the results of the final models indicated that greater CPB was related to significantly less child anxiety for all groups: Dutch and Australian mothers and fathers. Further, these results were obtained across symptom and diagnostic measures of child anxiety.

Implications of Thesis Findings

Theoretical and Research Implications

The findings of this thesis contribute to the examination of the role of fathers in the child anxiety literature, and further, the parenting construct of CPB. Importantly, the findings of this thesis provide an empirical investigation into the theoretical model presented by

Bögels and colleagues (Bögels & Perotti, 2011; Bögels & Phares, 2008), and suggest that paternal CPB may play an important, potentially protective, role towards childhood anxiety across symptom measures of anxiety. Further, when the power of analyses was increased (as in Chapter 5), greater paternal CPB was also related to less likelihood of child anxiety at the diagnostic level. Thus, the findings of this thesis provide an important empirical contribution to the examination of fathers' CPB and childhood anxiety.

In addition to empirically evaluating the role of paternal CPB and its relationship with child anxiety, this thesis provides an important contribution to the theoretical and research literature by including the empirical examination of maternal CPB. Despite no theoretical groundings for including examination of maternal CPB, the exploration of maternal CPB has provided an important contribution to the empirical literature. Further, this contribution provides an addition to the theoretical model proposed by Bögels and Perotti (2011), and Bögels and Phares (2008), that is that maternal CPB is also associated with child anxiety in the same direction as for fathers. Several researchers have acknowledged the importance of examining both parents in order to be able to contribute to a greater body of literature examining differential effects (Phares & Compas, 1992; Phares, Fields, Kamboukos, & Lopez, 2005), and Chapters 2, 3, and 5 of this thesis confirm this. The results of these studies suggest that whilst fathers may report greater levels of CPB during the child's preschool years, the relationship between CPB and child anxiety is similar for mothers and fathers.

In Chapter 3 of this thesis it was suggested that perhaps examining CPB as a global construct through the use of a total score on a self-report measure of CPB may have potentially masked important associations between more physical aspects of CPB proposed to be particularly important for fathers, such as rough-and-tumble play, competition, and the encouragement of safe risk-taking. In Chapters 2, 4, and 5, CPB was examined at the level of subscales, revealing important additions to the literature. For example, in Chapter 4, only the

rough-and-tumble play subscale of the father-report questionnaire measure for CPB was related to less risk for child anxiety disorders. In the same paper, it was found that children were more inclined to take risks on a task when playing with their fathers, compared to when playing alone, suggesting that fathers may have the propensity to activate risk-taking (a sub-domain of CPB) in their children, consistent with previous research (Paquette, 2004; Paquette & Bigras, 2010). In addition, when CPB was measured retrospectively in a sample of adults (Chapter 2), a different pattern of findings emerged for one subscale. Here, it was found that adults who recalled their parents, particularly their fathers, as intentionally teasing towards them, reported *greater* current levels of anxiety. Explanations for these findings were directed towards some of the items on this scale holding negative connotations rather than the positive, playful manner that was the intention of the measure. This prompts the need to return to the stage of item-development, in collaboration with a sample of adults, prior to further use of the scale with adult populations, to ensure correct interpretation. Further, when looking at subscales of CPB, potentially important cross-cultural differences emerged in Chapter 5 where it was found that Dutch fathers engage in rough-and-tumble play to a greater extent than Dutch mothers and Australian parents. The examination of this parenting construct at the sub-domain level, and the differences obtained at this level, raised an important issue regarding the measurement of CPB at the level of subscales. These differences warrant the need for further investigation of the cross-cultural and cross-parent gender measurement of CPB prior to drawing conclusions regarding comparative effects of CPB across samples.

An important point worthy of consideration is that the theoretical model of CPB proposed by Bögels and Perotti (2011), and Bögels and Phares (2008), is restricted to child social anxiety. The reasons for this focus originate in the use of evolutionary theory to support the model, where it is suggested that through the course of evolution the father has

become specialised in the confrontation with the external environment and social competition. Thus, the authors argue that if a father displays anxiety in response to the external world, such as in social situations, this may be more influential on the child than maternal social anxiety, as fathers are suggested to be specialised in the confrontation to the external world. The authors add that an additional reason for the focus towards social anxiety was the more pragmatic reason that there are similar rates of social anxiety disorder in men and women (Bögels & Perotti, 2011). Empirical studies conducted in The Netherlands have consequentially focussed on the investigation of parental CPB on child social anxiety and social inhibition, and have obtained significant results for the paternal role (Majdandžić et al., 2015; Majdandžić et al., 2014; Möller et al., 2015). However, whilst child social anxiety has been the focus of the theoretical model and empirical literature conducted in The Netherlands, Bögels and Perotti also suggested that fathers may have “an equally or more important influence on other types of child anxiety that concern the external world” (Bögels & Perotti, 2011, p.178). Whilst we did include the examination of social anxiety symptoms in Chapter 2, and found a significant negative association (such that adults that recalled greater maternal and paternal encouragement of social assertiveness reported fewer current social anxiety symptoms), this thesis chose to focus more broadly on the investigation of CPB and its association with child anxiety in general, across disorders. For example, Chapter 3 examined relationships between preschool anxiety symptoms, clinical anxiety diagnoses, and CPB. This study found that greater paternal and maternal CPB was associated with lower report of child anxiety symptoms. Further, maternal CPB was found to have a negative association with child anxiety at the disorder level. In Chapter 4, paternal CPB through the domain of rough-and-tumble play was associated with child anxiety diagnosis, where fathers of anxious children reported engaging in less rough-and-tumble play than fathers of non-anxious children. Further, in Chapter 5 structural equation models revealed that CPB from

both mothers and fathers predicted fewer anxiety symptoms and disorders in Dutch and Australian children. Thus, an important contribution to the research and theoretical literature from this thesis is that greater paternal, and maternal, CPB is associated with lower report of child anxiety symptoms and disorders in general, and is not necessarily exclusive to child social anxiety.

This thesis also examined the relationship between parental anxiety and CPB. The theoretical work developing this construct has suggested that paternal anxiety may interfere with the ability to challenge children's behaviour (Bögels & Perotti, 2011; Bögels & Phares, 2008). The empirical literature examining traditionally studied parenting constructs, has displayed some evidence to suggest that parents who are anxious themselves engage in more negative rearing practices (e.g., Hudson & Rapee, 2001)). The theoretical models of the aetiology of child anxiety also support this view (see for example Chorpita & Barlow, 1998). Chapters 3 and 4 of this thesis included parental anxiety, measured via self-report, and together found no convincing evidence to suggest that parental anxiety impacted levels of parental CPB. It may be that trait levels of anxiety (as those measured in these studies using the DASS-21), are not as influential towards parenting behaviours compared to clinical levels of anxiety. Further, participants in Chapters 3 and 4 were recruited from a community sample, consequently it is possible that significant effects may emerge in parents with clinical anxiety disorders. As yet, no studies have investigated CPB in clinically anxious parents. However, Möller et al. (2015) recently assessed symptoms of anxiety disorders in parents and found that, for fathers, social anxiety symptoms were associated with less CPB, and for mothers, generalised anxiety symptoms were associated with less CPB. As the study by Möller et al. (2015) is the only study to date to examine the relationship between diagnostic measures of parental anxiety and CPB, replication of these effects is required before conclusions can be drawn. Nevertheless, the findings obtained in Chapter 3 and 4 are

consistent with the findings of recent meta-analyses which found that parental anxiety did not impact the relationship between parenting and child anxiety (Möller et al., 2016; Van Der Bruggen, Stams, & Bögels, 2008). Thus, whilst a preliminary conclusion could be that parental CPB may be a type of parenting that is fairly robust against parental trait anxiety, as noted there is a need for investigation of this construct within samples of clinically anxious parents.

An additional contribution of this body of work that merits acknowledgement was the consideration of additional factors that have been previously implicated in the parenting and child anxiety literature: the temperament style BI, and child gender. Emerging empirical evidence from The Netherlands has obtained evidence suggesting that CPB may be negatively related to child anxiety precursors, such as BI or social inhibition (Majdandžić et al., 2014). However, when we examined this relationship in Chapter 4, no empirical support for this relationship was obtained. These findings are consistent with the recent meta-analysis by Möller et al. (2016) which concluded that maternal and paternal parenting was more strongly associated to child anxiety symptoms rather than child anxiety precursors such as BI. Further, whilst offspring gender was included in all preliminary analyses pertaining to CPB and anxiety, it was only included in the hypotheses and subsequent regression analyses of Chapter 3. Similar to the relationship between CPB and BI, no evidence of a relationship between CPB and child gender was obtained in this study, nor were any significant differences across gender obtained in any studies of this thesis. As noted earlier, these findings support studies by Majdandžić et al. (2015). Therefore, there does not appear to be any empirical relationship between CPB and BI for Australian preschool-aged children nor does there appear to be any relationship between CPB and gender of preschool children nor any gender differences in how male and female adults recall their experience of CPB from their mothers and fathers during youth.

Clinical implications

As the limitations of this thesis are yet to be discussed, it is important to highlight that the direction of effects between CPB and anxiety has not been examined in this thesis. That said, the papers included in this thesis provide preliminary evidence for the relationship between challenging parenting and child anxiety. It is possible that this parenting behaviour may be protective against childhood anxiety disorders. Further, these papers suggest the importance of continuing to evaluate the role of CPB from both caregivers, particularly as a potential protective mechanism, and may be of potential clinical utility with respect to anxiety treatment.

Considering the research implicating certain parenting behaviours in the aetiology and maintenance of childhood anxiety disorders (McLeod, Wood, & Weisz, 2007; Murray, Creswell, & Cooper, 2009; Rapee, 1997), it is not surprising that some research has turned to investigating whether treatment effects are enhanced when adding a parental component. The purpose of adding a parental component to treatment is to target unhelpful parental cognitions and behaviours, and to assist parents with effective ways to manage their children's anxiety (Breinholst, Esbjørn, Reinholdt-Dunne, & Stallard, 2012). However, reviews and meta-analyses of the effectiveness of parental involvement in cognitive behavioural therapy (CBT) compared to child-focussed CBT have, for the most part, suggested no significant differences between these approaches towards child outcome (see Bodden et al., 2008; Breinholst et al., 2012; Scaini, Belotti, Ogliari, & Battaglia, 2016). However, in their review of randomised controlled trials incorporating parental involvement in child anxiety treatment, Breinholst et al. (2012), concluded that discrepancies between parental involvement and improved child outcome are likely attributable to several methodological variations and limitations across trials. For example, there is great variation with respect to which parental factors are targeted during treatment, the measurement of these factors, and the measurement of outcomes (see

also Manassis et al., 2014). Further, when reviewing paternal involvement in anxiety treatment, Bögels and Phares (2008) concluded that nearly all studies utilised mothers in the parent treatment group or described their participants as “parents” without specifying the numbers of mothers and fathers. A recent meta-analysis in this area discussed the concern that empirically identified parental factors associated with child anxiety aetiology and maintenance are not always specifically targeted, alternatively, it may be that when parents and children are involved in treatment, too many treatment components are included, ensuing that a large amount of information has to be processed by the family (Thulin, Svirsky, Serlachius, Andersson, & Öst, 2014). Further, Thulin et al. (2014) have proposed that such increased content may reduce practice time allocated to essential components of CBT, such as exposure, which is suggested to be crucial for treatment outcome (see Kendall, 1994; Kendall et al., 2006). Whilst the evidence is mixed with regards to whether parental involvement in treatment enhances child treatment gains, this, as noted, may be attributable to several methodological issues, including which parenting behaviours should be targeted during intervention.

Considering the above within the context of clinical implications, the findings of this thesis suggest that both mothers and fathers may play important roles in child anxiety aetiology and maintenance. However, we do not yet know if parental gender plays a role in child anxiety treatment. In order to enhance our understanding, one of the necessary directions for future clinical research will be to ensure that interventions involving “parents” include both the mother and the father, and differentiate the gender of caregivers accordingly. Further, the findings uncovered in this thesis pertaining to the examination of CPB provide evidence for a parenting behaviour that may potentially help to reduce child anxiety. Whilst longitudinal research is required to establish the direction of effects regarding CPB and child anxiety, if these findings indicate that greater CPB from parents may reduce risk for child

anxiety, it may be beneficial to incorporate aspects of this parenting domain into treatment. For example, if clinical practice involving parents is typically aimed at helping mothers become less overprotective (Bögels & Perotti, 2011), incorporating components into treatment that include teaching both mothers and fathers to become more challenging in their parenting behaviour may have potential benefits. For example, parents who are able to facilitate greater risk-taking in their children as well as model confident and brave behaviour may be more convincing in supporting their child during exposure tasks in CBT. Further, encouraging parents to engage in more CPB, may have benefits that extend beyond the therapy room. For example, increased displays of parental CPB in the home and external environments may assist children to transfer and generalise skills to be brave in the face of uncertainty or new situations. However, prior to considering incorporation of CPB into anxiety treatment, greater understanding of the relationship between CPB and child anxiety is warranted.

Thesis Strengths

This thesis has identified a number of important strengths through both the theoretical and empirical evaluation of a novel parenting construct, and the inclusion of an underrepresented population in this field: fathers. First, a consistently identified limitation of many studies examining the relationship between parenting behaviours and childhood anxiety disorders is that conclusions regarding “parenting behaviours” have been formed from primarily maternal samples. A strength of the current thesis was the inclusion of fathers in research examining childhood anxiety, addressing a call in the literature for greater attention to the paternal role (Bögels & Phares, 2008). This thesis addressed this gap by providing a systematic summary of fathers parenting behaviours with regards to rejection, control, and more importantly, modelling of anxious behaviour (Chapter 1) and further, through the

empirical and psychometric investigation of a novel parenting construct, CPB (Chapters 2 through 5).

Another strength of this thesis was the psychometric evaluation of measures used to assess CPB as well as the contribution of adapted and novel measures to assess this construct. In Chapter 2, the CPBQ7-12 was adapted to develop a retrospective assessment tool for measuring CPB, and the underlying factor structure was explored. This produced a shorter version of the measure (increasing potential utility and dissemination), and factors that loaded meaningfully onto three subscales, all with good internal consistency. Importantly, this chapter highlighted the need to establish content validity where it was noted that the items retained for one of the subscales displayed a negative aspect of parenting, respectively termed ‘intentional teasing’, rather than the playful aspect of teasing that was intended for this measure. This raises the need to return to item development for some items to increase the content validity of the measure prior to further use with adult samples. Ensuring the psychometric strength of instruments limits measurement issues that may lead to inconsistent findings in future research and this was further addressed in Chapter 5, where in addition to a multi-group confirmatory factor analysis, an investigation of the cross-cultural and cross-parent gender equivalence of the CPBQ4-6 was performed. Notably, this study showed that the preschool version of this measure has an equivalent factor structure and factor loadings across all groups. However, some differences were obtained at the level of intercepts of the scale, potentially indicative of measurement bias. Thus, a strength of this thesis was the use of cross-cultural data in order to establish not only the psychometric validity of this parenting construct but also to examine the measurement invariance of a questionnaire developed to assess this construct. The findings of this thesis attest to the need to establish measurement equivalence prior to drawing inferences about the relationships of parenting constructs towards childhood anxiety.

Additional strengths of this thesis included the multi-method assessment of child anxiety utilised (Chapters 3 through 5), as well as the development of a novel measure for assessing CPB (Chapter 4). The inclusion of data from structured interviews and questionnaires to assess preschool anxiety in the present sample was a distinct strength of this thesis. The ADIS-P-IV is considered a gold standard measure for the assessment of anxiety disorders and demonstrates excellent psychometric properties (Lyneham, Abbott, & Rapee, 2007). Further, the PAS provided a parent-report questionnaire for the assessment of preschool anxiety symptoms which correspond to DSM-IV diagnostic categories and has demonstrated good construct validity and test-retest reliability (Spence, Rapee, McDonald, & Ingram, 2001), and demonstrated excellent internal consistency throughout this thesis. In addition to the use of psychometrically well-established scales, an additional strength of this thesis was the development of a novel behavioural measure for assessing CPB: The Challenging Parenting Behaviour Computer Task (CBCT) in Chapter 4. Previous work examining CPB has relied on parent-report questionnaire or the use of observational coding of CPB examined within the laboratory setting (Majdandžić et al., 2015; Majdandžić et al., 2014; Möller et al., 2015), in attempt to counter reported difficulties of recruiting fathers for research, such as time and work constraints, this study attempted to develop a measure for assessing paternal CPB that could be conducted within the family home. Thus, the use of multi-method assessments for anxiety and CPB was a strength of this thesis, as was the consideration of factors to increase paternal participation.

Thesis Limitations and Future Directions

This thesis has some limitations that should be noted and utilised as a platform for developing future studies. First, the cross-sectional design of the studies included in this thesis ensures that it is not possible to delineate cause and effect. For example, from Chapter 2 it could be that adults who are anxious recall more negative parenting characteristics from

their parents such as greater intentional teasing and lower encouragement of social assertion and engagement with novelty, rather than these parenting characteristics experienced during childhood leading to increased levels of anxiety in later life. Likewise, in Chapters 3 through 5, it could be that child anxiety elicits less challenging parenting behaviour. Whilst a longitudinal design was not possible within the current thesis, the only study to date utilising a prospective design has shown the results in the hypothesised direction. It was observed that over a six-month period observed CPB from fathers was found to predict less child social anxiety in 4-year old children, whereas the opposite direction of effects was observed for mothers (Majdandžić et al., 2014). The development of prospective longitudinal studies investigating the impact of early CPB from fathers and mothers on later child anxiety is an important next step in investigating this construct. In addition, to-date no experimental designs have been developed where parents' CPB has been manipulated, given that these designs have been implemented successfully to demonstrate the impact of other parenting behaviours such as modelling of anxious behaviour (see Burstein & Ginsburg, 2010; De Rosnay, Cooper, Tsigaras, & Murray, 2006), this could be an additional path for future investigations to explore this parenting behaviour prior to the longitudinal evaluation of this construct.

Second, although the studies in this thesis examined the relationship between CPB and offspring anxiety, an acknowledged limitation of Chapters 3 through 5, was that only mothers provided information pertaining to child anxiety. The reasons for this were twofold: 1) participants were part of a larger RCT where only mothers attended the laboratory sessions and thus completed the diagnostic interviews, and 2) in an attempt to increase retention rate of fathers, questionnaires for these caregivers were kept relatively brief and consequently only mothers were asked to report on preschool anxiety symptoms. Consequently, there is the potential that the results obtained in this thesis are reflective of shared method variance from

mothers. The inclusion of data from ADIS-IV-P interviews in Chapters 3 to 5 attempted to account for this limitation, where, although based on interviews with mothers, diagnoses were assigned by skilled diagnosticians trained in the use of evidence to assess criteria for anxiety disorders using a gold-standard measure. However, this limitation may have potentially masked certain effects, for example perhaps fathers engage in more or less CPB of their children depending on whether they themselves perceive their child to be anxious or not. Therefore, studies that incorporate diagnostic and questionnaire assessments of anxiety from both caregivers would be an important inclusion in future research.

An often-acknowledged gap in the literature is that there are relatively few studies examining the parenting behaviours of clinically anxious parents, particularly anxious fathers (Bögels & Phares, 2008), and the studies included in this thesis offer no exception. A limitation to interpreting the effects pertaining to the relationship between parental anxiety and CPB in the studies included in this thesis was the acknowledged limitation of a community sample and the use of a self-report questionnaire assessment of current parent trait anxiety. The low rates of anxiety reported within the parent sample, in addition to the assessment of current anxiety symptoms rather than an assessment of clinical diagnosis of anxiety may have precluded the assessment of this relationship. In a recent investigation of this relationship, although not a clinical sample, Möller et al. (2015) assessed parental anxiety utilising a screening tool for adult anxiety symptoms and found that paternal social anxiety symptoms and maternal generalized anxiety symptoms were associated with less parental CPB and greater report of overinvolvement. Consequently, it is recommended that future research explore the relationship between parent anxiety and CPB with a more thorough multi-method assessment of parental anxiety, and further through the recruitment of clinically anxious parent samples.

A further methodological limitation that impacts the generalizability of the findings across this thesis is the sample selection bias. The preschool-aged samples in Chapters 3, 4, and 5 were initially selected for study inclusion based on their behaviourally inhibited (BI) or behaviourally uninhibited (BUI) temperament using an extreme groups design. This study design allowed for the examination of an important risk factor with respect to the aetiology of child anxiety. Whilst more of a periphery variable in the studies included in this thesis, temperament was an important variable of interest in the larger RCT from which these samples were drawn. Thus, the use of an extreme groups design within this context limits whether the current findings can be applied to the general population, however allowed for the examination of the relationship between CPB and BI (Chapter 4).

The sample utilised in Chapter 2 was obtained from an undergraduate sample and provides some evidence of similarity with the samples obtained using an extreme-groups design in that the recalled parenting of both mothers and fathers were similarly related to current adult anxiety. However, comparisons across these studies are difficult to draw due to the diverse measures used to assess CPB and anxiety across these groups. In addition to the limitations of the extreme groups design, participants of studies included in this thesis were primarily from oceanic two-parent mother-father households, limiting the generalisability of results to single-parent or gay and lesbian families and to other ethnic backgrounds. Consequently, future research should assess the associations between parenting behaviour and child anxiety in families of diverse cultural and caregiver contexts.

Conclusion

For some time, research examining risk factors implicated in the aetiology of childhood anxiety disorders has focussed on the role of specific parenting behaviours. Those that have gained particular traction in the literature are the parenting behaviours of control and rejection, and, more recently the modelling of anxious or avoidant behaviours. It has also

been proposed that parents who are themselves anxious, will engage with these parenting behaviours to a greater extent than parents without anxiety. However, closer inspection of the literature research examining “parents”, their behaviours and levels of anxiety, reveals that the majority of the literature has included mothers only, majority mothers, or has aggregated mother and father reports.

Stemming from this acknowledged limitation in the literature, and a review of the role for fathers in child anxiety, Bögels and Perotti (2011) and Bögels and Phares (2008) developed a theoretical model where a role for fathers was included in the aetiology of child anxiety, and the parenting behaviour known as challenging parenting behaviour was introduced. The studies in this thesis are amongst the first to empirically evaluate the relationship of this novel parenting domain and its association with child anxiety, and to evaluate measures used to assess this construct.

Results of this thesis have suggested that fathers’ *and* mothers’ challenging parenting behaviour may be associated with less child anxiety. Importantly, the studies included in this thesis suggest, for the most part, that although fathers may endorse greater engagement in challenging parenting behaviour, the relationship between challenging parenting behaviour and childhood anxiety appears to be relatively similar, regardless of caregiver gender. Further, this thesis highlighted the importance of establishing the psychometric properties and measurement equivalence of constructs prior to drawing inferences about their utility. The improvement of measures used to assess CPB, particularly cross-culturally, provides an important avenue for future research. Overall, this thesis contributed to a growing body of research beginning to investigate the relationship between paternal parenting behaviours and childhood anxiety disorders, specifically through the novel-parenting domain termed challenging parenting behaviour. In order to be able to better understand parenting behaviours that may be involved in the aetiology of, and potential protection against, anxiety

disorders in children, it is important that both caregivers are included in research examining “parenting”.

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Appendix i

Supplementary Tables from Chapter 1 and Review References

Supplementary Table 1.1.

Summary of Study Sample Characteristics of Included Studies (n = 45).

Study (Year)	Study Design	Sample	Child (n)	Father (n)	Country	Study Location	Ethnicity/ Country of Origin	Range Age (years)	Mean Age (years)	Female (%)	Ass. (n)
van Gastel, Legerstee, and Ferdinand (2009)	GD	Clin	167	141	NE	Lab	NR	8-13	10.05	49.1	4
Bögels, Bamelis, and van der Bruggen (2008)	GD	Clin	159	138	NE	Lab	NR	8-18	12.37	59.7	2
Pfiffner and McBurnett (2006)	GD	Clin	143	116	USA	Lab	79% Caucasian, 11% Mixed, 5% Other single ethnicities	5-11	8	87.5	2
Hudson, Comer, and Kendall (2008)	GD	Clin	84	62	USA	Lab	88% Caucasian, 9.5% African American, 2.4% Other	7-13	9.69	46.4	2
Barrett, Fox, and Farrell (2005)	GD	Clin	47	30	AUS	Lab	97.6% Caucasian	7-13	10.08	NR	2
Hudson and Rapee (2005)	GD	Clin	78	57	AUS	Lab	NR	7-16	11.08	NR	1
Muris, Bögels, Meesters, van der Kamp, and van Oosten (1996)	GD	Clin	64	42	NE	Lab	NR	8-18	12	51.6	8
Siqueland, Kendall, and Steinberg (1996)	GD	Clin	44	34	USA	Lab	100% Caucasian	9-12	10.91	31.8	4

Gere, Villabø, Torgersen, and Kendall (2012)	GD	Clin	190	135	NO	Lab	95.3% Norwegian	7-13	10.41	53.2	6
Bögels, Stevens, and Majdandžić (2011)	GD	Com (H/L SA)	144	99	NE	School	92% Dutch origin	8-12	10.4	57	1
Johnson and Greenberg (2013)	GD	Com	975	647	USA	Home	88% White 6% Hispanic 2% African American	NR	11.3	52	2
Greco and Morris (2002)	GD	Com (H/L SA)	48	40	USA	Lab	92% Caucasian, 2% African American, 2% Hispanic, and 4% Asian	NR	11.36	47.9	7
Hudson and Rapee (2002)	GD	Clin/Com	114	57	AUS	Lab	NR	7-16	10.9	NR	1
Knappe, Beesdo-Baum, Fehm, Lieb, and Wittchen (2012)	COR	Com	1053	27	GE	Home	NR	14-17	NR	49	21
Aktar, Majdandžić, de Vente, and Bögels (2013)	COR	Com	122	122	NE	Lab	>90% Dutch	1	1	55	1
McShane and Hastings (2009)	COR	Com	115	92	CAN	Home/Day Care	80% Caucasian	2.08-4.92	3.53	53	2
McClure, Brennan, Hammen, and Le Brocque (2001)	COR	Com	816	522	AUS	Home	91.4% Caucasian	15	15	49.3	3
Varela, Niditch,	COR	Clin/	47	7	USA	Lab	100% Latino	7-13	9.98	NR	2

Hensley-Maloney, Moore, and Creveling (2013)		Com									
Koszycki et al. (2013)	COR	High/Low risk	151	68	CAN	Lab	NR	7-18	10.55	45.7	2
Field, Om, Kim, and Vorn (2011)	COR	Com	200	NR	CAM	School	NR	16-18	16.99	50	2
de Vente, Majdandžić, Colonesi, and Bögels (2011)	COR	Com	135	109	NE	Lab /Home	95% Fathers, 90% Mothers Dutch origin	0.92-1.33	0.99	NR	2
Vulić-Prtorić and Macuka (2006)	COR	Com	331	317	CRO	School	NR	10-16	13.07	49.20	4
Chambers, Power, Loucks, and Swanson (2001)	COR	Off	122	101	SCOT	IF	NR	15-22	18.6	0	2
Muris (2002)	COR	Com	220	NR	NR	School	NR	13-16	14.2	51.40	4
Verhoeven, Bögels, and van der Bruggen (2012)	COR	Com	179	179	HOL	NR	99% Caucasian	8-12	10.27	NR	6
Muris et al. (2006)	COR	Com	701	561	SAF	School	38.2% White, 29.7% Coloured, 32.1% Black	8-18	12.28	52.30	4
Bögels, van Oosten, Muris, and Smulders (2001)	COR	Clin/Com	190	162	NE	Clinic/School	99% Caucasian	8-18	12.6	52.10	3
Tillman and	COR	Off	35	35	USA	Home	83% White, 11%	14-18	16.4	100	1

Juntunen (2013)								Native American, 3% African American, 3% Not disclosed				
Rork and Morris (2009)	COR	Com	32	32	USA	Lab		94% Caucasian, 6% Asian American	10-13	11.63	47	2
Hastings et al. (2008)	COR	Com	133	105	CAN	Home/ Lab / Day Care		73.6% Caucasian, 15.7% Mixed, 5.3% Asian, 5.3% Other	2.08- 4.92	3.5	54	4
Remmerswaal and Muris (2011)	COR	Com	223	145	NE	School/ Home		NR	7-12	9.97	53	1
Addelaim (2003)	COR	Com	331	NR	SA	School		NR	NR	16.7	0	2
Stewart and Barling (1996)	COR	Com	187	189	CCAN	Home		NR	NR	NR	45.40	2
Varela, Sanchez- Sosa, Biggs, and Luis (2009)	COR	Com	217	87	MEX/ USA	Lab		45.6% Mexican; 33.2% Latin American; 21.2% European American	7-16	11.3	NR	4
Bögels and van Melick (2004)	COR	Com	75	75	NE	School/ Home		NR	8-13	10.3	46.70	12
Muris, Meesters, Merckelbach, and Hülßenbeck (2000)	COR	Com	159	NR	NE	School		95% Caucasian	9-13	10.82	48	4
Grüner, Muris, and Merckelbach (1999)	COR	Com	117	NR	NE	School		NR	9-12	10.4	51	28
Muris and	COR	Com	45	NR	NE	School		>90% Caucasian	8-12	9.8	58	19

Merckelbach (1998)												
Kohlmann, Schumacher, and Streit (1988)	COR	Com	329	NR	GE	School	NR		12-14	12	51	2
van der Bruggen, Bögels, and van Zeilst (2010)	COR	Com	37	37	NE	School/ Home	97% Dutch		8-11	9.62	43	1
Roelofs, Meesters, ter Huurne, Bamelis, and Muris (2006)	COR/G D	Com	237	228	NE	School	>90% Caucasian		9-12	10.5	52	8
Muris, Meesters, and van Brakel (2003)	COR	Com	1196	NR	NE	School	>90% Caucasian		9-16	12.6	48.20	4
Niditch and Varela (2012)	COR	Com	124	113	USA	School	55% Caucasian, 30% African American, 9% Latino, 5% Asian American, 2% Other		12-18	14.82	63	2
Burstein and Ginsburg (2010)	EXP/G D	Com	25	12	USA	Lab	76% Caucasian, 16% African American, 4% Asian, 4% Mixed		8-12	9.24	44	4
Edwards, Rapee, and Kennedy (2010)	LONG	Com	638	249	AUS	Home	95.7% Australian Born		3.0-5.6	3.95	49.70	1

Note. NR = Not Reported. Study design acronyms: GD = Group Differences, COR = Correlational EXP = Experimental, LONG = Longitudinal.

Sample acronyms: Clin = Clinical, Com = Community, H/L SA = High/Low Socially Anxious.

Country where study was conducted acronyms: NE = Netherlands, USA = United States of America, AUS = Australia, NO = Norway, GE = Germany, CAN = Canada, CAM = Cambodia, CRO = Croatia, SCOT = Scotland, HOL = Holland, SAF = South Africa, SA = Saudi Arabia, MEX = Mexico. Study location acronyms: Lab = Laboratory, IF = Incarceration Facility.

Ass. (*n*) = Number of associations obtained from the study and incorporated into the review.

Supplementary Table 1.2.

Summary of Review Findings

Parenting Behaviour	Parenting Method	Study	Independent variable		Dependent Variable					Results		
			Parenting Variable	Informant	Child Anxiety Variable	Child Anxiety (Type)	Informant	Method	Scale	Exp.	Un-Exp.	NS
Rejection	Quest.	Knappe et al. (2012)	FEE	Adol.	CIDI	Social Phobia	Adol.	Int.	Dx.	Y		
			FEE	Adol.	CIDI	Specific Phobia	Adol.	Int.	Dx.			Y
			FEE	Adol.	CIDI	Panic	Adol.	Int.	Dx.			Y
			FEE	Adol.	CIDI	Ag.	Adol.	Int.	Dx.			Y
			FEE	Adol.	CIDI	GAD	Adol.	Int.	Dx.			Y
			FEE	Adol.	CIDI	OCD	Adol.	Int.	Dx.			Y
			FEE	Adol.	CIDI	Anxiety	Adol.	Int.	Dx.			Y
		McShane & Hastings (2009)	NFV	Parent	Ob.	Anxiety	Ob.	Ob.	Scale			Y
		van Gastel et al. (2009)	EMBU-C	Child	CIDI	Anxiety	Clinician	Int.	Dx.			Y
		Field et al. (2011)	PBI	Adol.	HSCL-25	Anxiety	Adol.	Quest.	Scale			Y
de Vente et al. (2011)	CPBQ	Father	IBQ-R	Social fear	Mother Father mean score	Quest.	Scale			Y		
Vulić-Prtorić & Macuka	KOBI	Child (female)	SKAD-62	Anxiety	Child	Quest.	Scale	Y				

(2006)	KOBI	Child (male) Adol.	SKAD- 62 HADS	Anxiety	Child	Quest.	Scale	Y	
Chambers et al. (2001)	PBI-SF	Adol.	HADS	Anxiety	Adol.	Quest.	Scale	Y	
Muris (2002)	EMBU-C	Adol.	PSWQ	Worry	Adol.	Quest.	Scale		Y
Verhoeven et al. (2012)	RBQ	Combined : Child Mother Father	SCARE D-71	Anxiety	combined: Child Mother Father	Quest.	Scale	Y	
	RBQ	Combined : Adol. Mother Father	SCARE D-71	Anxiety	combined: Adol. Mother Father	Quest.	Scale	Y	
Muris et al. (2006)	EMBU-C	Child	SCARE D	Anxiety	Child	Quest.	Scale	Y	
Bögels et al. (2001)	EMBU-C/P	Father and Child	SAS	Social anxiety	Child/ Adol.	Quest.	Scale		Y
Tillman & Juntunen (2013)	Child PARQ/ Control- Father Version	Adol.	YSR	Anxiety	Adol.	Quest.	Scale		Y
Addelaim (2003)	Parental Treatment Styles Scale	Adol.	Taif Anxiety Scale	Anxiety	Adol.	Quest.	Scale	Y	
Stewart & Barling (1996)	Punishing and Rejecting Subscales	Father	Teacher- Child Rating Scale	Anxiety	Teacher	Quest.	Scale	Y	
	Punishing and Rejecting Subscales	Father	Teacher- Child Rating	Anxiety	Teacher	Quest.	Scale		Y

				Scale						
Varela et al. (2009)	CRPBI-SF	Child	RCMAS	Anxiety	Child	Quest.	Scale	Y		
	CRPBI-SF	Child	RCMAS	Anxiety	Mother	Quest.	Scale	Y		
Muris et al. (2000)	EMBU-C	Child	PSWQ-C	Worry	Child	Quest.	Scale	Y		
Grüner et al. (1999)	EMBU-C	Child	CAS	Anxiety	Child	Quest.	Scale	Y		
	EMBU-C	Child	CAS	Generalized Anxiety	Child	Quest.	Scale	Y		
	EMBU-C	Child	CAS	Separation Anxiety	Child	Quest.	Scale	Y		
	EMBU-C	Child	CAS	Social Phobia	Child	Quest.	Scale	Y		
	EMBU-C	Child	CAS	Panic Attack/ Ag.	Child	Quest.	Scale	Y		
	EMBU-C	Child	CAS	Physical Injury Fears	Child	Quest.	Scale	Y		
	EMBU-C	Child	CAS	OCD	Child	Quest.	Scale	Y		
Muris & Merckelbach (1998)	EMBU-C	Child	SCARE D	Anxiety	Child	Quest.	Scale			Y
	EMBU-C	Child	SCARE D	Generalized Anxiety	Child	Quest.	Scale			Y
	EMBU-C	Child	SCARE D	Separation Anxiety	Child	Quest.	Scale			Y
	EMBU-C	Child	SCARE D	Environmental-Situational Phobia	Child	Quest.	Scale			Y
	EMBU-C	Child	SCARE D	Panic	Child	Quest.	Scale			Y

	EMBU-C	Child	SCARE D	Social Phobia	Child	Quest.	Scale		Y
	EMBU-C	Child	SCARE D	OCD	Child	Quest.	Scale		Y
	EMBU-C	Child	SCARE D	PTSD	Child	Quest.	Scale		Y
	EMBU-C	Child	SCARE D	Animal Phobia	Child	Quest.	Scale		Y
	EMBU-C	Child	SCARE D	Blood-Injection-Injury Phobia	Child	Quest.	Scale		Y
	Kohlmann et al. (1988)	Child	ESI	STAIC	Child	Quest.	Scale	Y	
	Roelofs et al. (2006)	Child	EMBU-C	RCADS	Child (male)	Quest.	Scale	Y	
		Child	EMBU-C	RCADS	Child (female)	Quest.	Scale	Y	
	Muris et al. (2003)	Child/Adol.	EMBU-C	SCAS, SCARE D, PSWQ	Child	Quest.	Scale	Y	
	Niditch & Varela (2012)	Adol.	EMBU-C	RCMAS	Adol.	Quest.	Scale		Y
Rejection (Warmth)	Knappe et al. (2012)	Adol.	FEE	CIDI	Adol.	Int.	Dx.	Y	
		Adol.	FEE	CIDI	Adol.	Int.	Dx.		Y
		Adol.	FEE	CIDI	Adol.	Int.	Dx.		Y
		Adol.	FEE	CIDI	Adol.	Int.	Dx.		Y
		Adol.	FEE	CIDI	Adol.	Int.	Dx.		Y

	FEE	Adol.	CIDI	OCD	Adol.	Int.	Dx.		Y
	FEE	Adol.	CIDI	Anxiety	Adol.	Int.	Dx.		Y
van Gastel et al. (2009)	EMBU-C	Child	CIDI	Anxiety	Clinician	Int.	Dx.		Y
Pfiffner & McBurnett (2006)	APQ & PCRQ	Father	DISC	Anxiety	Clinician	Int.	Dx.		Y
Muris, Steerneman, Merckelbach, & Meesters (1996)	EMBU-P	Father	NR	Anxiety	NR	NR	Dx.		Y
	EMBU-C	Child	NR	Anxiety	NR	NR	Dx.		Y
	EMBU-P	Father	FSSC	Anxiety	Child	Quest.	Scale		Y
	EMBU-C	Child	FSSC	Anxiety	Child	Quest.	Scale		Y
McClure et al. (2001)	CRPBI	Child	SCID	Anxiety	Clinician	Int.	Dx.		Y
Siqueland et al. (1996)	CRPBI	Child	ADIS	Anxiety	Clinician	Int.	Dx.	Y	
	CRPBI	Father	ADIS	Anxiety	Clinician	Int.	Dx.		Y
Varela et al. (2013)	CRPBI	Child	RCMAS	Anxiety	Child	Quest.	Scale		Y
Koszycki et al. (2013)	PBI	Child	STAIC	Anxiety	Child	Quest.	Scale	Y	
Johnson & Greenberg (2013)	New Parenting measure	Father	CBCL-Anxiety	Anxiety	Child	Quest.	Scale		Y
	New Parenting measure	Child	CBCL-Anxiety	Anxiety	Child	Quest.	Scale		Y
Vulić-Prtorić	KOBI	Child	SKAD-	Anxiety	Child	Quest.	Scale		Y

& Macuka (2006)	KOBI	(female) Child (male)	62 SKAD- 62	Anxiety	Child	Quest.	Scale		Y
Muris (2002)	EMBU-C	Adol.	PSWQ	Worry	Adol.	Quest.	Scale		Y
Muris et al. (2006)	EMBU-C	Child	SCARE D	Anxiety	Child	Quest.	Scale		Y
Bögels et al. (2001)	EMBU-C / EMBU-P	Father and Child	SAS	Social anxiety	Child/ Adol.	Quest.	Scale		Y
Greco & Morris (2002)	PBI (modified)	Child	SPAI-C	Social anxiety	Child	Quest.	Scale		Y
Hastings et al. (2008)	CRPR	Father	Social Wariness	Social fear	Ob.	Ob.	Scale		Y
Bögels & van Melick (2004)	MFP	C/M/F	SCARE D-C-71	Anxiety	Child	Quest.	Scale		Y
	MFP	C/M/F	SCARE D-C-71	Anxiety	Mother	Quest.	Scale	Y	
	MFP	C/M/F	SCARE D-C-71	Anxiety	Father	Quest.	Scale	Y	
	MFP	C/M/F	SCARE D-C-71	Anxiety	Child/Mot her/Father	Quest.	Scale		Y
Muris et al. (2000)	EMBU-C	Child	PSWQ-C	Worry	Child	Quest.	Scale		Y
Grüner et al. (1999)	EMBU-C	Child	CAS	Anxiety	Child	Quest.	Scale		Y
	EMBU-C	Child	CAS	Generalized Anxiety	Child	Quest.	Scale		Y
	EMBU-C	Child	CAS	Separation Anxiety	Child	Quest.	Scale		Y
	EMBU-C	Child	CAS	Social	Child	Quest.	Scale		Y

			EMBU-C	Child	CAS	Phobia Panic Attack/ Ag.	Child	Quest.	Scale		Y
			EMBU-C	Child	CAS	Physical Injury Fears	Child	Quest.	Scale		Y
		Muris & Merckelbach (1998)	EMBU-C	Child	CAS	OCD	Child	Quest.	Scale		Y
			EMBU-C	Child	SCARE D	Anxiety	Child	Quest.	Scale	Y	
			EMBU-C	Child	SCARE D	Generalized Anxiety	Child	Quest.	Scale	Y	
			EMBU-C	Child	SCARE D	Separation Anxiety	Child	Quest.	Scale	Y	
		Kohlmann et al. (1988)	ESI	Child	STAIC	Anxiety - trait	Child	Quest.	Scale		Y
		Roelofs et al. (2006)	EMBU-C	Child	RCADS	Anxiety	Child (male)	Quest.	Scale	Y	
			EMBU-C	Child	RCADS	Anxiety	Child (female)	Quest.	scale		Y
		Muris et al. (2003)	EMBU-C	Child/ Adol.	SCAS, SCARE D, PSWQ	Anxiety	Child	Quest.	Scale		Y
Rejection	Ob.	Bögels et al. (2008)	Family interaction task	Ob.	ADIS	Anxiety	Clinician	Int.	Dx.		Y
		Greco & Morris (2002)	Origami Task	Ob.	SPAI-C	Social anxiety	Child	Quest.	Scale		Y
			Origami Task	Ob.	SPAI-C	Social anxiety	Child	Quest.	Scale		Y

Rejection (Warmth)		Hudson et al. (2008)	Ob.	Ob.	ADIS	Anxiety	Clinician	Int.	Dx.	Y	
		Barrett et al. (2005)	Ob.	Ob.	DISC	Anxiety	Clinician	Int.	Dx.	Y	
		Greco & Morris (2002)	Origami Task	Ob.	SPAI-C	Social anxiety	Child	Quest.	Scale		Y
		Rork & Morris (2009)	Multi-family interaction Task	Ob.	SPAI-C	Social anxiety	Child	Quest.	Scale		Y
		Hastings et al. (2008)	Ob.	Ob.	Social Wariness	Social fear	Ob.	Ob.	Scale		Y
Control	Quest.	Knappe et al. (2012)	FEE	Adol.	CIDI	Social Phobia	Adol.	Int.	Dx.		Y
			FEE	Adol.	CIDI	Specific Phobia	Adol.	Int.	Dx.	Y	
			FEE	Adol.	CIDI	Panic	Adol.	Int.	Dx.	Y	
			FEE	Adol.	CIDI	Ag.	Adol.	Int.	Dx.	Y	
			FEE	Adol.	CIDI	GAD	Adol.	Int.	Dx.		Y
			FEE	Adol.	CIDI	OCD	Adol.	Int.	Dx.		Y
			FEE	Adol.	CIDI	Anxiety	Adol.	Int.	Dx.		Y
		McShane & Hastings (2009)	NFV	Parent	Ob.	Anxiety	Ob.	Ob.	Scale		Y
		van Gastel et al. (2009)	EMBU-C	Child	CIDI	Anxiety	Clinician	Int.	Dx.		Y
		Pfiffner & McBurnett (2006)	APQ & PCRQ	Father	DISC	Anxiety	Clinician	Int.	Dx.		Y
Muris et al.	EMBU-P	Father	NR	Anxiety	NR	NR	Dx.		Y		

(2006)	EMBU-C	Child	NR	Anxiety	NR	NR	Dx.		Y
	EMBU-P	Father	FSSC	Anxiety	Child	Quest.	Scale		Y
	EMBU-C	Child	FSSC	Anxiety	Child	Quest.	Scale		Y
McClure et al. (2001)	CRPBI	Child	SCID	Anxiety	Clinician	Int.	Dx.		Y
	CRPBI	Child	SCID	Anxiety	Clinician	Int.	Dx.		Y
Siqueland et al. (1996)	CRPBI	Child	ADIS	Anxiety	Clinician	Int.	Dx.		Y
	CRPBI	Father	ADIS	Anxiety	Clinician	Int.	Dx.		Y
Gere et al. (2012)	RBQ	Father	ADIS	Anxiety	Clinician	Int.	Dx.		Y
	RBQ	Partner	ADIS	Anxiety	Clinician	Int.	Dx.		Y
	RBQ	Father	CBCL-Anxiety	Anxiety	Father	Quest.	Scale	Y	
	RBQ	Partner	CBCL-Anxiety	Anxiety	Father	Quest.	Scale		Y
	RBQ	Father	CBCL-Anxiety	Anxiety	Mother	Quest.	Scale		Y
	RBQ	Partner	CBCL-Anxiety	Anxiety	Mother	Quest.	Scale		Y
Varela et al. (2013)	CRPBI	Child	RCMAS	Anxiety	Child	Quest.	Scale	Y	
Koszycki et al. (2013)	PBI	Child	STAIC	Anxiety	Child	Quest.	Scale	Y	
Field et al. (2011)	PBI	Adol.	HSCL-25	Anxiety	Adol.	Quest.	Scale		Y
de Vente et al. (2011)	CPBQ	Father	IBQ-R	Social fear	Mother Father	Quest.	Scale		Y
Chambers et al. (2001)	PBI-SF	Adol.	HADS	Anxiety	Adol.	Quest.	Scale		Y

Muris (2002)	EMBU-C	Adol.	PSWQ	Worry	Adol.	Quest.	Scale	Y	
Verhoeven et al. (2012)	RBQ	C/M/F	SCARE D-71	Anxiety	C/M/F	Quest.	Scale		Y
	RBQ	C/M/F	SCARE D-71	Anxiety	C/M/F	Quest.	Scale	Y	
	RBQ	C/M/F	SCARE D-71	Anxiety	A/M/F	Quest.	Scale		Y
	RBQ	C/M/F	SCARE D-71	Anxiety	A/M/F	Quest.	Scale	Y	
Muris et al. (2006)	EMBU-C	Child	SCARE D	Anxiety	Child	Quest.	Scale	Y	
Bögels et al. (2001)	EMBU-C / EMBU-P	Father Child	SAS	Social anxiety	Child/ Adol.	Quest.	Scale		Y
Greco & Morris (2002)	PBI (modified)	Child	SPAI-C	Social anxiety	Child	Quest.	Scale		Y
Hastings et al. (2008)	CRPR	Father	Social Wariness	Social fear	Ob.	Ob.	Scale		Y
Addelaim (2003)	Parental Treatment Styles Scale	Adol.	Taif Anxiety Scale	Anxiety	Adol.	Quest.	Scale	Y	
Varela et al. (2009)	CRPBI-SF	Child	RCMAS	Anxiety	Child	Quest.	Scale		Y
	CRPBI-SF	Child	RCMAS	Anxiety	Mother	Quest.	Scale		Y
Bögels & van Melick (2004)	MFP	C/M/F	SCARE D-C -71	Anxiety	Child	Quest.	Scale	Y	
	MFP	C/M/F	SCARE D-C -71	Anxiety	Mother	Quest.	Scale		Y
	MFP	C/M/F	SCARE D-C -71	Anxiety	Father	Quest.	Scale	Y	
	MFP	C/M/F	SCARE	Anxiety	C/M/F	Quest.	Scale	Y	

			D-C -71						
		CRPBI	C/M/F	SCARE	Anxiety	Child	Quest.	Scale	Y
		CRPBI	C/M/F	D-C -71 SCARE	Anxiety	Mother	Quest.	Scale	Y
		CRPBI	C/M/F	D-C -71 SCARE	Anxiety	Father	Quest.	Scale	Y
		CRPBI	C/M/F	D-C -71 SCARE	Anxiety	C/M/F	Quest.	Scale	Y
	Muris et al. (2000)	EMBU-C	Child	D-C -71 PSWQ-C	Worry	Child	Quest.	Scale	Y
	Grüner et al. (1999)	EMBU-C	Child	CAS	Anxiety	Child	Quest.	Scale	Y
		EMBU-C	Child	CAS	Generalized Anxiety	Child	Quest.	Scale	Y
		EMBU-C	Child	CAS	Separation Anxiety	Child	Quest.	Scale	Y
		EMBU-C	Child	CAS	Social Phobia	Child	Quest.	Scale	Y
		EMBU-C	Child	CAS	Panic Attack/ Ag.	Child	Quest.	Scale	Y
		EMBU-C	Child	CAS	Physical Injury Fears	Child	Quest.	Scale	Y
		EMBU-C	Child	CAS	OCD	Child	Quest.	Scale	Y
	Muris & Merckelbach (1998)	EMBU-C	Child	SCARE D	Anxiety	Child	Quest.	Scale	Y
		EMBU-C	Child	SCARE D	Separation Anxiety	Child	Quest.	Scale	Y
		EMBU-C	Child	SCARE D	Environmen- tal- Situational	Child	Quest.	Scale	Y

						Phobia					
		van der Bruggen et al. (2010)	Tangram Task	Ob.	STAIC	Anxiety	Child	Quest.	Scale		Y
		Roelofs et al. (2006)	EMBU-C	Child	RCADS	Anxiety	Child (male)	Quest.	Scale	Y	
			EMBU-C	Child	RCADS	Anxiety	Child (female)	Quest.	Scale	Y	
		Muris et al. (2003)	EMBU-C	Child/Adol.	SCAS, SCARE D, PSWQ	Anxiety	Child	Quest.	Scale	Y	
		Niditch & Varela (2012)	EMBU-C	Adol.	RCMAS	Anxiety	Adol.	Quest.	Scale		Y
		Edwards et al. (2010)	OP	Father	PAS-R	Anxiety	Father	Quest.	Scale	Y	
Control	Ob.	Bögels et al. (2008)	Family interaction task	Ob.	ADIS	Anxiety	Clinician	Int.	Dx.		Y
		Hudson et al. (2008)	Ob.	Ob.	ADIS	Anxiety	Clinician	Int.	Dx.		Y
		Barrett et al. (2005)	Ob.	Ob.	DISC	Anxiety	Clinician	Int.	Dx.	Y	
		Greco & Morris (2002)	Origami Task	Ob.	SPAI-C	Social anxiety	Child	Quest.	Scale		Y
			Origami Task	Ob.	SPAI-C	Social anxiety	Child	Quest.	Scale	Y	
		Rork & Morris	Multi-family interaction	Ob.	SPAI-C	Social anxiety	Child	Quest.	Scale		Y

		(2009)	Task									
		Hastings et al. (2008)	Ob.	Ob.	Social Wariness	Social Fear	Ob.	Ob.	Scale			Y
		Hudson & Rapee (2002)	Tangram Task	Ob.	ADIS	Anxiety	Child	Int.	Dx.			Y
Control	Other	Hudson & Rapee (2005)	Parent Int.	Father	ADIS	Anxiety	Clinician	Int.	Dx.			Y
Modelling	Quest.	van Gastel et al. (2009)	EMBU-C	Child	CIDI	Anxiety	Clinician	Int.	Dx.			Y
		Muris (2002)	EMBU-C	Adol.	PSWQ	Worry	Adol.	Quest.	Scale	Y		
		Muris et al. (2006)	EMBU-C	Child	SCARED	Anxiety	Child	Quest.	Scale	Y		
		Remmerswaal & Muris (2011)	SISFS	Father	FSFQ	Specific fear	Child	Quest.	Scale	Y		
		Muris et al. (2000)	EMBU-C	Child	PSWQ-C	Worry	Child	Quest.	Scale	Y		
		Grüner et al. (1999)	EMBU-C	Child	CAS	Anxiety	Child	Quest.	Scale	Y		
			EMBU-C	Child	CAS	Generalized Anxiety	Child	Quest.	Scale	Y		
			EMBU-C	Child	CAS	Separation Anxiety	Child	Quest.	Scale	Y		
			EMBU-C	Child	CAS	Social Phobia	Child	Quest.	Scale	Y		
			EMBU-C	Child	CAS	Panic Attack/ Ag.	Child	Quest.	Scale	Y		
			EMBU-C	Child	CAS	Physical Injury Fears	Child	Quest.	Scale	Y		

			EMBU-C	Child	CAS	OCD	Child	Quest.	Scale	Y
		Muris & Merckelbach (1998)	EMBU-C	Child	SCARE D	Anxiety	Child	Quest.	Scale	Y
			EMBU-C	Child	SCARE D	Generalized Anxiety	Child	Quest.	Scale	Y
			EMBU-C	Child	SCARE D	Separation Anxiety	Child	Quest.	Scale	Y
		Roelofs et al. (2006)	EMBU-C	Child	RCADS	Anxiety	Child (male)	Quest.	Scale	Y
			EMBU-C	Child	RCADS	Anxiety	Child (female)	Quest.	Scale	Y
		Muris et al. (2003)	EMBU-C	Child/Adol.	SCAS, SCARE D, PSWQ	Anxiety	Child	Quest.	Scale	Y
Modelling	Ob.	Aktar et al. (2013)	Stranger & Dinosaur Task	Ob.	Infant fear	Fear	Ob.	Ob.	Scale	Y
		Burstein & Ginsburg (2010)	Modelling Anxious/ Non-Anxious Behaviour	Father	STAIC	Anxiety - state	Child	Quest.	Scale	Y
			Modelling Anxious/ Non-Anxious Behaviour	Father	C-FAT	Anxious feelings	Child	Quest.	Scale	Y
			Modelling Anxious/ Non-Anxious Behaviour	Father	C-FAT	Anxious Cognitions	Child	Quest.	Scale	Y

			Modelling Anxious/ Non-Anxious Behaviour	Father	C-FAT	Avoidance	Child	Quest.	Scale	Y
Modelling	Other	Bögels et al. (2011)	Vignette	Father	SPAI-C	Social	Child	Quest.	Scale	Y

Note. Exp. = expected relationship and statistically significant; Un-Exp. = un-expected relationship and statistically significant; NS = Not statistically significant; NR = Not Reported; Quest. = Questionnaire; Ob. = Observed/Observational/Observer; Adol. = Adolescent; Int. = Interview; Dx. = Diagnosis; SF = Short-Form; C/M/F = Combined child/mother/father report; Y = Yes, relationship obtained.

Parenting variable acronyms: APQ = Alabama Parenting Questionnaire, CPBQ = Comprehensive Parenting Behaviour Questionnaire, CRPBI = Child's Report of Parental Behaviour, CRPR = Child Rearing Practices Report, EMBU-C/P= Egena Minnen Beträffande Uppfostran (My Memories of Upbringing) Child and Parent Scales, ESI = Erziehungsstil-Inventar (Child Rearing Inventory), FEE = German Short Form of the EMBU, KOBI = Quality of Family Interaction Scale, MFP = Mother-Father-Peer Inventory, NFV = New Friends Vignette, PARQ = Parental Acceptance- Rejection Questionnaire, PBI = Parental Bonding Instrument, PCRQ = Parent-child relationship scale brief-version, RBQ = Rearing Behaviour Questionnaire, SISFS = Sources of Information about the Swine Flu Scale.

Child anxiety variable acronyms: ADIS = Anxiety Disorder Interview Schedule, CAS = Clinical Anxiety Scale, CBCL-Anxiety = Child Behaviour Check List, DSM Anxiety Score, C-FAT = Children's Feelings and Thoughts Measure, CIDI = The Computerised Munich Version of the Composite International Diagnostic Interview, DISC = Diagnostic Interview Schedule for Children, FSSC = Fear Survey Schedule for Children, FSFQ = Fear of Swine Flu Questionnaire, HADS = The Hospital Depression and Anxiety Scale, HSCL-25 = Hopkins Symptom

Checklist, IBQ-R = Infant Behaviour Questionnaire, Revised, PAS-R = Preschool Anxiety Scale – Revised, PSWQ-C = Penn State Worry Questionnaire – Child version, PSWQ = Penn State Worry Questionnaire, RCADS = Revised Child Anxiety and Depression Scale, RCMAS = Revised Children's Manifest Anxiety Scale, SAS = The Social Anxiety Scale, SCARED = The Screen for Child Anxiety Related Emotional Disorders, SCARED-71 = The Screen for Child Anxiety Related Emotional Disorders 71-item version, SCAS = Spence Children's Anxiety Scale, SCID = Structured Clinical Interview for DSM-IV, SKAD-62 = The Fear and Anxiety Scale for Children and Adolescents (Croatian), SPAI-C = Social Phobia and Anxiety Inventory for Children, STAIC = State-Trait Anxiety Inventory, Child version. YSR = Youth Self-Report for ages 11-18 Anxiety subscale.

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Appendix ii

**The Manual for Verbal Coding during the Challenging Behaviour
Computer Task**

Rebecca S. Lazarus & Jennifer L. Hudson

Centre for Emotional Health, Department of Psychology, Macquarie University,

Sydney, Australia.

ID #:

Coding sheet for Challenging Behaviour Computer Task

Date of play:

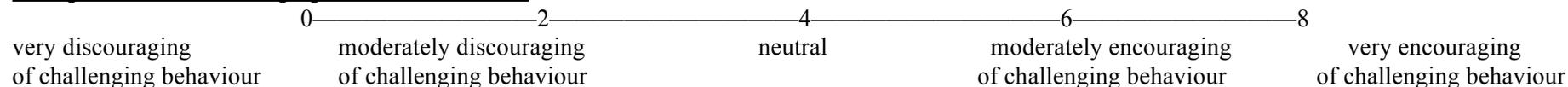
Does child want to play the task alone?	Yes	No
Does child protest from playing game at any point?	Yes	No
Does Dad leave room for child-alone trial?	Yes	No
Does the child display anxiety during the task?	Yes	No

Time father-child play starts:

Behaviour	Count
Father verbally <u>challenges behaviour</u> , encouraging child to: continue in game/ take another step (press blue button)/ engage in behaviour that child finds scary **	
Father verbally encourages child to <u>save</u> their points (press yellow button) as preferred option (therefore not encouraging them to take risks).	
Father is verbally <u>ambiguous</u> in instructions to the child, or asks the child what he/she would like to do	

Fathers Reaction to Stepping on a Bindii/Bee	Count
Father reacts positively/playfully to child stepping on a bindii/bee **	
Father reacts negatively/punitively to child stepping on a bindii/bee	

Rating of Father's Challenging Behaviour Overall**



**Scales used for the verbal component of the CBCT.

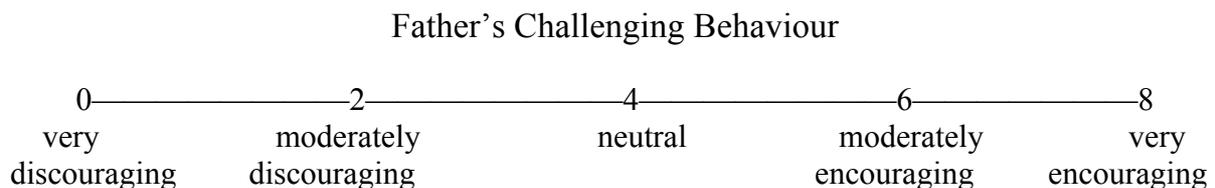
Overview

Each father-child interaction is scored for challenging behaviour as per the coding sheet. At the end of the interaction, counts are tallied and the father is given an overall summary score on one global scale of challenging behaviour. Examples of the three types of father's verbal behaviour are described below.

- Challenging: e.g. "Go on, take another step, it's not scary"
- Save: e.g. "I think we should save our points, we don't want to get stung by a bee"
- Ambiguous: e.g. "Do you want to save your points or keep walking" or "you're the one playing, you decide"

General notes for coding

The coder must listen to the entire father-child trial and tally the counts of the verbal behaviours described above before rating the global scale. The ratings are made based on the father's behaviour during the whole interaction.



This scale is intended to provide a summary rating of the father's verbal encouragement or discouragement of "Challenging Behaviour" towards the child during the interaction. Challenging Behaviour is defined as encouraging the child in a playful manner to exhibit risky behaviour (such as encouraging the child to take another step towards the playground). In this scale 'discouraging' refers to deterring the child from taking a risk (such as encouraging the child to save their points rather than to take another step). Generally, rate above four if the father verbally encourages the child to take another step towards the playground (or press the blue button) on most occasions and below 4 if the father discourages risk taking behaviour on most occasions, by telling the child to save their points (or press the yellow button).

- Zero The father directly tells the child not to take risk (steps) on all occasions. Father continually tells the child to save their points. Father may scold the child if he/she wants to take a step. If the child is scared/protests the father lets the child stop immediately without question.
- One The father tells the child not to take risk (steps) on most occasions. Father often tells the child to save their points. If the child is scared/protests the father lets the child stop.
- Two The father prefers their child to not take risk (steps) and more often than not, tells the child to save their points. If the child is scared, the father will most likely let the child stop.
- Three The father may suggest once or twice to the child to save their points. When the child says they want to save their points, the father agrees with this choice. If the child becomes scared, the father will let the child stop mostly without questioning his/her decision.
- Four Father may both encourage child to take steps but also encourage time to save points to a similar degree. The father's verbal instructions may be ambiguous or the father may ask the child what he/she prefers to do on most occasions. Father may not provide much feedback or suggestion. (e.g. "do what you think is right").
- Five The father may slightly encourage the child to take risk (steps) but does not reinforce the decision or provide the child with feedback. If the child becomes scared, the father may slightly encourage him/her to continue.
- Six The father considerably encourages the child to take risk (steps) by either directly telling the child to take steps on some occasions or positively rewarding them when they do so (e.g. "well done you took a step"). If the child becomes scared/protests father may encourage child to continue.
- Seven The father encourages the child to take risk (steps) on most occasions and reinforces the risk-taking behaviour by congratulating the child on most occasions. If the child becomes scared/protests father will encourage/insist child to continue on most occasions.
- Eight The father verbally encourages the child to take risk (step) on all occasions and often positively rewards them when they do so. If the child protests or becomes scared, the father really encourages or insists for him/her to continue. The father may also acknowledge the risky behaviour (e.g. "it's a bit risky but I think we should take another step")

Note: Following feedback from Professor Susan Bögels at the University of Amsterdam in September, 2014 the coding procedure was updated to include Child Anxiety and at the time of task and the father's response to stepping on a bindii/bee.

Appendix iii

Macquarie University Ethics Approvals

Final Approval- Ethics application reference-5201100488

Ethics Secretariat <ethics.secretariat@mq.edu.au>
To: A/Prof Jennie Hudson <jennie.hudson@mq.edu.au>
Cc: talia.morris@mq.edu.au

5 July 2011 at 15:38

Dear A/Prof Hudson

Re: "Temperament, environment and cognitive processes in confident children" (Ethics Ref: 5201100488)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Human Research Ethics Committee and you may now commence your research.

The following personnel are authorised to conduct this research:

A/Prof Jennie Hudson- Chief Investigator/Supervisor
Dr Helen Dodd, Mrs Talia Maree Morris & Dr Thalia Eley-Co-Investigators

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports. Your first progress report is due on 05 July 2012.

If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).
4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms
5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have final approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of Final Approval to an external organisation as evidence that you have Final Approval, please do not hesitate to contact the Ethics Secretariat at the address below.

Please retain a copy of this email as this is your official notification of final ethics approval.

Yours sincerely
Dr Karolyn White
Director of Research Ethics
Chair, Human Research Ethics Committee



REBECCA LAZARUS <rebecca.lazarus@students.mq.edu.au>

Amendment Requests for Ethics Applications 5201000902 and 5201100488

Ethics Secretariat <ethics.secretariat@mq.edu.au>

Tue, Jul 3, 2012 at 11:28 AM

To: Jennie Hudson <jennie.hudson@mq.edu.au>, rebecca.lazarus@students.mq.edu.au

Dear Jennie and Rebecca

RE: "A cognitive behavioural intervention program for behaviourally inhibited children and their parents" (REF: 5201000902) and "Temperament, environment, genetic and cognitive processes in confident children" (REF: 5201100488)

Thank you for your correspondence dated June 8 2012. The following amendments to project REF 5201000902 have been reviewed and approved effective 22 June 2012:

1. To email participants completing the "challenging behaviour computer task" a survey link to the post-debrief consent form.
2. To conduct a diagnostic interview (ADIS) and SCAS measures via telephone with mothers from families who participated in the study more than 4 months ago.
3. To send families completing the 'challenging behaviour computer task' a pre-pack, which contains information required by participants for their testing session.

The following amendments to project REF have been reviewed and approved effective 22 June 2012:

1. To email participants completing the "challenging behaviour computer task" a survey link to the post-debrief consent form.
2. To conduct a diagnostic interview (ADIS) and SCAS measures via telephone with mothers from families who participated in the study more than 4 months ago.
3. To send families completing the 'challenging behaviour computer task' a pre-pack, which contains information required by participants for their testing session.
4. To approach families who have approached you previously whose children were too old (over 4.5 years) to participate in the study. These families will participate in the "challenging behaviour computer task" and mothers would complete the diagnostic interview (ADIS) and SCAS measures. These families will also go into the draw to win one of ten Events cinemas vouchers.
5. To contact local medical centres, community centres, play groups and shopping centres to ask permission to advertise the study in order to recruit more participants to the study.

Please do not hesitate to contact me if you have any questions or concerns regarding your ethics applications.

Regards

Nicola Myton

--

Office of the Deputy Vice Chancellor (Research)

Ethics Secretariat

Office of the Deputy Vice-Chancellor
(Research)

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3 March 2016

Professor Jennifer Hudson
Department of Psychology
Faculty of Human Sciences
Macquarie University
NSW 2109

Dear Professor Hudson

Reference No: 5201600092

Title: *Challenging Parenting Behaviour and Childhood Anxiety*

Thank you for submitting the above application for ethical and scientific review. Your application was considered by the Macquarie University Human Research Ethics Committee (HREC (Human Sciences & Humanities)) at its meeting on 26 February 2016.

I am pleased to advise that ethical and scientific approval has been granted for this project to be conducted at:

- Macquarie University

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research (2007 – Updated May 2015)* (the *National Statement*).

This letter constitutes ethical and scientific approval only.

Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement*, which is available at the following website:

<http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research>

2. This approval is valid for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval for this protocol.

3. All adverse events, including events which might affect the continued ethical and scientific acceptability of the project, must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Should you have any queries regarding your project, please contact the Ethics Secretariat on 9850 4194 or by email ethics.secretariat@mq.edu.au

The HREC (Human Sciences and Humanities) Terms of Reference and Standard Operating Procedures are available from the Research Office website at:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics

The HREC (Human Sciences and Humanities) wishes you every success in your research.

Yours sincerely



Dr Karolyn White

Director, Research Ethics & Integrity,
Chair, Human Research Ethics Committee (Human Sciences and Humanities)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.

5 February 2014

Professor Jennifer Hudson
Department of Psychology
Faculty of Human Sciences

Dear Professor Hudson

RE: *The relationship between challenging parenting behaviour and anxiety: A retrospective study*

Thank you for submitting the above application for ethical and scientific review. Your application was first considered by the Macquarie University Human Research Ethics Committee (HREC (Medical Sciences)) at its meeting on 28 November 2013 at which further information was requested to be reviewed by the HREC (Medical Sciences) Executive Committee at its meeting on 16 December 2013.

The HREC (Medical Sciences) Executive reviewed your correspondence out of session delegating authority to approve the application to the Ethics Secretariat.

The requested information was received with correspondence on 18 December 2013 and I am pleased to advise that ethical and scientific approval has been granted for this project to be conducted at:

- Macquarie University

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research (2007)* (the *National Statement*).

This letter constitutes ethical and scientific approval only.

Details of this approval are as follows:

Reference No: 5201300815

Approval Date: 5 February 2014

The following documentation has been reviewed and approved by the HREC (Medical Sciences):

Documents reviewed	Version	Date
MQ Human Research Ethics Committee Application Form	2.3	July 2013
Correspondence from Rebecca Lazarus responding to the HREC's feedback.		Received 18/12/2013
MQ Participant Information and Consent Form entitled <i>Parenting: An online Study</i>	1	12/12/2013
MQ Participant Pool Advertisement	1	12/12/2013
CPBQ 7-12 (Mother)		© 2010

Social Interaction Anxiety Scale (SIAS)		
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DASS 21		
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Advertisement 'Do you want to participate in Science and earn money?'	1	05/02/2014
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Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement*, which is available at the following website:

<http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research>

2. This approval is valid for five (5) years, subject to the submission of annual reports.

Your first annual report will be due: 1 January 2015

3. All adverse events, including events which might affect the continued ethical and scientific acceptability of the project, must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Should you have any queries regarding your project, please contact the Ethics Secretariat on 9850 4194 or by email ethics.secretariat@mq.edu.au

The HREC (Medical Sciences) Terms of Reference and Standard Operating Procedures are available from the Research Office website at:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics

The HREC (Medical Sciences) wishes you every success in your research.

Yours sincerely


Professor Tony Eyers

Chair, Macquarie University Human Research Ethics Committee (Medical Sciences)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.

Social Interaction Anxiety Scale (SIAS)

DASS 21

Advertisement 'Do you want to participate in Science and earn money?'

1

05/02/2014

Standard Conditions of Approval:

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The HREC (Medical Sciences) Terms of Reference and Standard Operating Procedures are available from the Research Office website at:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics

The HREC (Medical Sciences) wishes you every success in your research.

Yours sincerely


Professor Tony Eyers

Chair, Macquarie University Human Research Ethics Committee (Medical Sciences)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.

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14 April 2016

Dear Dr Hudson

Reference No: 5201600091

Title: *The Relationship between Challenging Parenting Behaviour and Anxiety in Emerging Adulthood*

Thank you for submitting the above application for ethical and scientific review. Your application was considered by the Macquarie University Human Research Ethics Committee (HREC (Human Sciences & Humanities)).

I am pleased to advise that ethical and scientific approval has been granted for this project to be conducted by:

- Macquarie University

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research (2007 – Updated May 2015)* (the *National Statement*).

Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement*, which is available at the following website:

<http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research>

2. This approval is valid for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval for this protocol.

3. All adverse events, including events which might affect the continued ethical and scientific acceptability of the project, must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol and associated documents must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Should you have any queries regarding your project, please contact the Ethics Secretariat on 9850 4194 or by email ethics.secretariat@mq.edu.au

The HREC (Human Sciences and Humanities) Terms of Reference and Standard Operating Procedures are available from the Research Office website at:

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The HREC (Human Sciences and Humanities) wishes you every success in your research.

Yours sincerely



Dr Karolyn White

Director, Research Ethics & Integrity,

Chair, Human Research Ethics Committee (Human Sciences and Humanities)

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