



School of Psychology

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**A Systematic Review of the Relationship between  
Psychological Flexibility and Parental Stress, and an  
Empirical Study Validating the SCARED-P in an Early  
Childhood Sample.**

Thesis submitted in partial fulfilment of the requirement for  
the degree of:

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## **Preface**

This thesis spans two distinct, yet related, areas concerned with child wellbeing. The first area relates to parental stress, which has implications for child mental health outcomes. The second area relates to early childhood anxiety.

### **Systematic Review**

Parental stress (which for the purposes of the systematic review encompasses the constructs of stress, mental health symptomatology and poor mental wellbeing) has been shown to have far reaching negative impacts on both parental and child outcomes (Deater-Deckard et al., 2016). To promote wellbeing and psychological outcomes in parents and children, parenting stress can serve as a modifiable intervention target if its underlying processes are better understood. While many factors have previously been implicated in its development and maintenance, such as financial strain and perceived lack of social support, the concept of psychological flexibility has emerged as a potential factor relating to parental stress. Psychological flexibility (PF) refers to the ability to be aware, open, and committed to behaviours that are in line with deeply held values (Kashdan & Rottenberg, 2010). It centres around being adaptive and reflexive to the ebbs and flows of life by striving to connect with one's important life values. It is the key mechanism of change for Acceptance and Commitment Therapy (Hayes et al., 2006).

The systematic review included a summary and assessment of the quality of the evidence-base regarding the relationship between PF and parental stress. Ten of the twelve studies identified in the review provided evidence of a significant and positive relationship between PF and parental stress. As the majority of these studies were correlational in design, directionality of the relationship could not be fully established, although the few longitudinal studies included in this review provided partial evidence of a causal role. The findings of this review provide tentative evidence that improving parental PF could be a useful target of

psychological interventions to reduce parental stress. The research and clinical implications in terms of avenues of further interest and preventive parental stress interventions were discussed, considering the review's findings.

### **Empirical Study**

Anxiety disorders are one of the most common psychological difficulties in childhood and are linked to impairments across all areas of life, including academic, social, and family functioning (Hirshfeld-Becker et al., 2010). Anxiety-specific measures validated for early childhood (defined in the empirical study as 4-7 years old) are lacking, with current validated psychometric measures being general psychopathology measures, and hence only measuring a narrow range of anxiety symptoms. It is important to have a reliable and valid measure of anxiety in early childhood, as some studies have found that anxiety disorders in childhood are predictors of later anxiety disorders (Isolan et al., 2011; Benjamin et al., 2013). Identifying children who require further assessment and intervention at an early age may aid in preventing anxiety disorders from having further impact on a child's life.

The empirical study therefore investigated the psychometric properties of a childhood anxiety measure, the Screen for Child Anxiety Related Emotional Disorders: Parent Version (SCARED-P), in a predominantly early childhood sample referred to a research centre for emotional or behavioural problems by their teachers. The SCARED was originally developed for middle childhood and adolescence. This study provided partial support for the SCARED-P's use in assessing for anxiety in younger children. There was partial support for the original proposed factor structure of the SCARED-P. The SCARED-P and its subscales also showed good internal consistency. The analysis supported the SCARED-P's construct validity with other validated anxiety questionnaire subscales and a diagnostic interview. Children who had higher scores on the SCARED-P demonstrated more successful risk-related decision-making on a computerised balloon task, indicative that scores on the SCARED-P are associated with

differing levels of observed risk-related behaviour. Overall, further validation of the SCARED-P in larger community samples is indicated.

**Understanding the relationship between psychological flexibility and parental stress: A  
Systematic Review**

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**Author note**

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(Appendix A). The author has no known conflict of interest to declare.

### **Abstract**

Previous research identifies parental stress as having a negative impact on child mental health and behavioural outcomes. Mechanisms associated with parental stress have largely been explored from an individual difference or environmental perspective. Psychological flexibility (PF) refers to the ability to pursue valued life aims despite the presence of distress, and is made up of interconnected processes that unfold over time. There is emerging evidence in the research literature of a relationship between measures of PF and parental stress. However, no existing systematic review has yet synthesised the evidence-base for the relationship between parental stress and PF. Seven electronic databases (PsycInfo, Scopus, Applied Social Sciences Index & Abstracts, Cumulative Index to Nursing and Allied Health Literature, Education Resources Information Center, British Education Index, and Child Development and Adolescent Studies) were systematically searched by variations of the keywords ‘psychological flexibility’ and ‘parent’. Studies were restricted to those which utilised only validated measures of PF and parental stress (these included validated measures of parental or general stress, mental health symptoms or mental wellbeing). Of the 448 studies identified through initial electronic database searches, 12 studies met the inclusion criteria for systematic review. Ten studies provided evidence of a relationship between PF and parental stress. As the majority of these studies were correlational in design, directionality of the relationship could not be established. The findings of this review provide tentative evidence that improving parental PF could be a useful target of psychological interventions to reduce parental stress.

*Keywords:* Psychological flexibility; parent; psychological distress; stress

## **Understanding the relationship between psychological flexibility and parental stress: A Systematic Review**

Parenthood is a major life transition in which new parents experience fundamental changes within their family, relationships, and social roles (Grant et al., 2012; Oates, 1989). Adapting to this transition can present both rewards and challenges, as it can be accompanied by an increase in positive emotions, as well as stress and anxiety (Deater-Deckard, 1998; Nelson, Kushlev, English, Dunn, & Lyubomirsky, 2013; Oates, 1989). Parental stress can be broadly defined as the experience of distress or discomfort resulting from demands associated within the parenting role (Deater-Deckard, 1998). It represents a process that encompasses the parents' psychological wellbeing and behaviour, the qualities of the parent-child relationship, and the child's psychosocial adjustment (Deater-Deckard, 1998).

Parental stress and poor parental mental wellbeing can contribute to adverse child and parental outcomes (Hattangadi et al., 2020; Deater-Deckard et al., 2016). For example, higher parental stress has been associated with lower levels of parental sensitivity, which in turn can negatively influence child outcomes (Ward & Lee, 2020). Greater parenting stress has been associated with negative parenting behaviours, including harsh discipline (Venta, Velez & Lau, 2016), hostility (McMahon & Meins, 2012) and the potential for physical abuse towards a child (Rodriguez & Green, 1997). It is, therefore, important to identify potential mechanisms of change that can decrease parental stress to inform the development of relevant psychological interventions.

Parental stress can be measured utilising parenting-specific measures designed to capture the breadth of stress associated with the parenting role. Common measures include the Parenting Stress Index (Abidin, 1997) and the Parental Stress Scale (Berry & Jones, 1995). Although parental stress can be measured as its own distinct construct, research has consistently demonstrated a strong relationship between parenting stress and parental mental

health and wellbeing (Anastopoulos et al., 1992; Hastings et al., 2006; Shea & Coyne, 2011; Estes et al., 2009; Farmer & Lee, 2011). Indeed, Deater-Deckard (1998) encompasses parents' psychological wellbeing as part of their definition for parental stress. This wider definition of parental stress, that encompasses parental mental health and wellbeing, will be used in this review. Parental stress has historically been explored through the lens of environmental or individual parental differences that may be linked to higher or lower stress levels, including high workload, perceived social support, parent gender and family structure (Cornish et al., 2006; Östberg & Hagekull, 2000; Liang, Berger, & Brand, 2019). One area that has gained increasing attention is the relationship between parental stress and psychological flexibility.

Psychological flexibility (PF) can be broadly defined as the ability to pursue valued life aims despite the presence of distress (Kashdan & Rottenberg, 2010). It is not one singular process; instead, it is made up of overlapping processes that unfold over time. These processes include: an individual's ability to recognise and adapt to context-dependent demands; to shift mindsets or behaviour when strategies compromise personal or social functioning; to balance important yet competing life domains; and to be aware, open, and committed to behaviours that are in line with deeply held values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Kashdan & Rottenberg, 2010). PF is an important variable due to its contribution to psychological health, positioning that being flexible, as opposed to narrowly focusing on achieving happiness, leaves one open to experiencing more joy and meaning in life (Kashdan & Rottenberg, 2010; Hayes et al., 2006). PF is distinct from the more established concept of self-regulation (Williams, Ciarrochi, & Heaven, 2012), which is concerned largely with the management of socially undesirable impulses. PF extends to the management of internal and external experiences that are deemed personally, not just

socially, undesirable. (Williams et al. 2012; Morris, Silk; Steinberg, Myers, & Robinson, 2007).

PF has received some criticism due to the varied terminology and definitions used to define the construct across the literature (Cherry, Vander Hoeven, Patterson, & Lumley, 2021; Doorley, Goodman, Kelso, & Kashdan, 2020). The evidence base around PF has largely stemmed from cross sectional studies, limiting the ability to make causal links between PF and other concepts such as stress. Despite this, there have been consistent findings linking poor flexibility with a range of mental health difficulties (Levin et al., 2014; Stange et al., 2017). This relationship has been explored within a parenting context. For example, one aspect of PF, experiential avoidance, has been linked to parental mental health difficulties. Experiential avoidance can broadly be defined as the inability or unwillingness to remain in contact with ones' own internal distress. Shea and Coyne (2011) reported that mothers who used experiential avoidance to regulate their experiences of depression were at the highest risk for parenting stress. This finding was interesting as it suggests a causal relationship between using psychologically inflexible strategies to manage depression and increased parenting stress. Higher experiential avoidance has also been linked to ineffective parenting behaviours and levels of psychological distress (Brown, Whittingham, & Sofronoff, 2015). PF more generally may also play a role in the development of parental stress and mental health outcomes, with Moyer and Sandoz (2020) reporting a trend towards psychological flexibility in parenting acting as a possible moderator in the relationship between parent and child distress. Taken together, these studies indicate a theoretical justification for exploring the relationship between PF and parental stress further.

PF as a general construct is the core targeted mechanism of change in Acceptance and Commitment Therapy (ACT; Hayes et al., 2006; Li, 2009). ACT aims to increase ones ability

to contact the present moment more fully as a conscious human being, and to change or persist in behavior when doing so serves valued ends (Hayes et al, 2006). ACT is a third wave cognitive-behavioural therapy that incorporates acceptance, mindfulness, and some behavioural techniques. While ACT is underpinned by some of the same constructs of cognitive behavioural therapy (CBT), rather than focusing on changing psychological events directly, ACT interventions seek to change the function of those events and the individual's relationship to them (Collard, 2019; Hayes et al., 2006). Across a wide range of clinical populations, ACT research has shown that higher levels of PF are associated with better quality of life outcomes (Hayes et al., 2006). It has been used as a targeted intervention for parents in the context of children's chronic and life-threatening health conditions and neurodiversity (Brown, Whittingham, Boyd, McKinlay, & Sofronoff, 2015; Prevedini et al., 2020; Han, Yuen, & Jenkins, 2020), and has been linked to improvements in parent-reported measures of stress, depression, and anxiety (Byrne, Ghrada, O'Mahony, & Brennan, 2021). Despite the potential role PF might have in the parenting context, there has been no systematic synthesis of the research considering the link between PF and parental stress.

Studies of PF have largely focused on its influence on individual outcomes, such as its contribution to wellbeing and lasting psychological health (Kashdan & Rottenberg, 2010). However, as greater understanding has emerged into how the parenting context is linked to children's emotional development (Gottman, Katz, & Hooven, 1996), research into parental PF and child outcomes has expanded (Williams et al., 2012). In the case of parenting, PF relates to acting in line with one's values in the face of challenging child or parenting-related behaviours (Burke & Moore, 2015). For example, this might involve accepting negative emotions as they arise, such as anger or the urge to shout, whilst acting in a way that maintains the parent-child relationship with warmth and empathy (Burke & Moore, 2015). As the parent-child relationship is reciprocal in nature, a reactive loop has been suggested in

which children's behavioural problems lead to stress in parents, which in turn results in parents under stress adopting certain parenting behaviours that then reinforce the child's behaviour problems (Hastings, 2002). PF's focus on shifting mindsets or behaviour when strategies compromise personal or social functioning may lead to parental responses being more aligned with deeply held values, thereby breaking the reactive loop.

PF can be measured as a general construct or within a specific context. The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) is a well-established tool for investigating general PF. While well validated across clinical samples (Bond et al., 2011; Gloster, Klotsche, Chaker, Hummel, & Hoyer, 2011), the measure has been subject to critique in regards to its discriminant validity (Tyndall et al., 2019; Wolgast, 2014), which links to wider criticism of PF as being a concept that is difficult to define and therefore accurately measure (Cherry et al., 2021). One area of development in the measurement of PF has been the move towards context-dependent measurements (Ong, Lee, Levin, & Twohig, 2019), which have been created or tailored to specific problems or populations including chronic pain (McCracken, Vowles, & Eccleston, 2004) and diabetes (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007). Parenting-specific measures have been developed to understand PF in relation to the parenting role. Ong et al. (2019) identified four parent-specific measures of PF across the literature (Burke & Moore, 2015; Brassell et al., 2016; Cheron, Ehrenreich, & Pincus, 2009; Greene, Field, Fargo, & Twohig, 2015), as well as parenting within a chronic pain context (McCracken & Gauntlett-Gilbert, 2011).

Although there is no current systematic review regarding the association between PF and parental stress, there has been a review conducted in the area of mindfulness and parenting stress (Cachia, Anderson, & Moore, 2015). Mindfulness and PF both reflect an overarching regulation process as to how a person is in contact with, and responds to, their internal and external environments in the present moment (Hayes et al., 2006). Cachia et al.

(2015) undertook a systematic review of ten studies reporting the efficacy of mindfulness interventions on stress and wellbeing in parents of children with autism spectrum disorder. Their findings suggested that mindfulness training was effective in reducing stress and increasing wellbeing of parents. Their review briefly covered PF, finding two papers reporting increased parent PF following an ACT intervention. However these two studies did not directly examine the relationship between PF and parental stress and were both unpublished, therefore not subject to peer review. Furthermore, in a different systematic review, Burgdorf, Szabo, and Abbott (2019) reviewed twenty-five studies of mindfulness interventions aimed at targeting parental stress and youth psychological outcomes. They concluded that mindfulness interventions for parents are associated with small to moderate immediate and maintained reductions in parental stress. They also found that the reduction in parental stress was linked to improved youth psychological and cognitive outcomes. They did not explore the mechanisms of change important to these mindfulness interventions, leaving the potential influence of PF in these interventions suggested but ultimately unknown.

As discussed above, PF has previously been highlighted as a relevant variable relating to stress in parents of children with physical health conditions. Cousino and Hazen's (2013) meta-analysis of 13 studies and narrative synthesis of 96 studies on caregivers of children with chronic illness concluded that parental stress is an important target for future interventions. While the review did not directly examine the relationship between parental stress and PF, they reported broader themes that could implicate PF's role in influencing parental stress. These included finding that parents' positive appraisals of their child's illness served as a protective factor for parental stress, and that greater use of avoidant coping strategies was linked to greater parental stress. These findings may link into PF's processes of not engaging in experiential avoidance, adapting to context-dependant demands and being aware, open, and committed to behaviours that are in line with deeply held values.

Due to the emerging evidence of PF as a potentially important variable in understanding parental stress, there is a need to improve our understanding of this area through a systematic review of the relationship between PF and parental stress. As parental stress has been closely linked to parental mental health and poor mental wellbeing, measures of either construct will be considered in this review. For brevity, the term parental stress will be used from here to capture both pure measures of parental stress, and related validated measures of mental health and mental wellbeing in parents. The systematic review presented here had the following aims: 1) To systematically identify and summarise the literature regarding psychological flexibility and parental stress; 2) To assess the quality of the identified studies; 3) To provide conclusions about the extent to which there is evidence for an association between PF and parental stress; and 4) To consider the potential implications of the review findings for the development of interventions for parental stress.

## **Method**

### **Search Strategy**

This review was informed by PRISMA guidelines for systematic reviews (Shamseer et al., 2015). The published protocol can be found on Prospero (CRD42020204509). A systematic search of published articles between 1900 and September 11<sup>th</sup> 2020 was conducted across the following databases; PsycInfo, Scopus, Applied Social Sciences Index & Abstracts, Cumulative Index to Nursing and Allied Health Literature, Education Resources Information Center, British Education Index, and Child Development and Adolescent Studies. Search terms were limited to variations of two key words (“psychological flexibility” and “parent”) to ensure all relevant papers were identified. The search utilised PF terms (psychological flexibility OR psychological inflexibility OR psychological flex\*). These search terms were combined with parent-specific terms (parent OR parental OR parenting OR mother\* OR father\* OR caregiver\* OR care giver). The search terms were mapped to

subject headings and keyword terms located in the title, abstract, or key concepts. Key terms were exploded to include related terms.

### **Inclusion and Exclusion Criteria**

Titles and abstracts of studies identified from the search were screened against inclusion and exclusion criteria (see Appendix B). Studies investigating the relationship between the two variables, PF and parental stress, were considered for inclusion. No restrictions were placed on parental stress outcome types, other than outcome measures had to be relevant to parental stress (e.g. specific measures of ‘parental stress’, as well as broader measures such as general stress, burnout, depression, anxiety, and mental wellbeing) and validated. Studies not measuring and reporting parents’ psychological flexibility were excluded. Measures of general PF were included alongside specific parent measures of PF. Studies reporting only wellbeing or distress outcomes for children or adolescents were excluded. Studies concerning specific diagnostic groups or clinical samples were included. Studies published in languages other than English were excluded. Studies meeting the inclusion criteria were retained for full-text evaluation, and reference lists were reviewed for relevant papers.

### **Search Results**

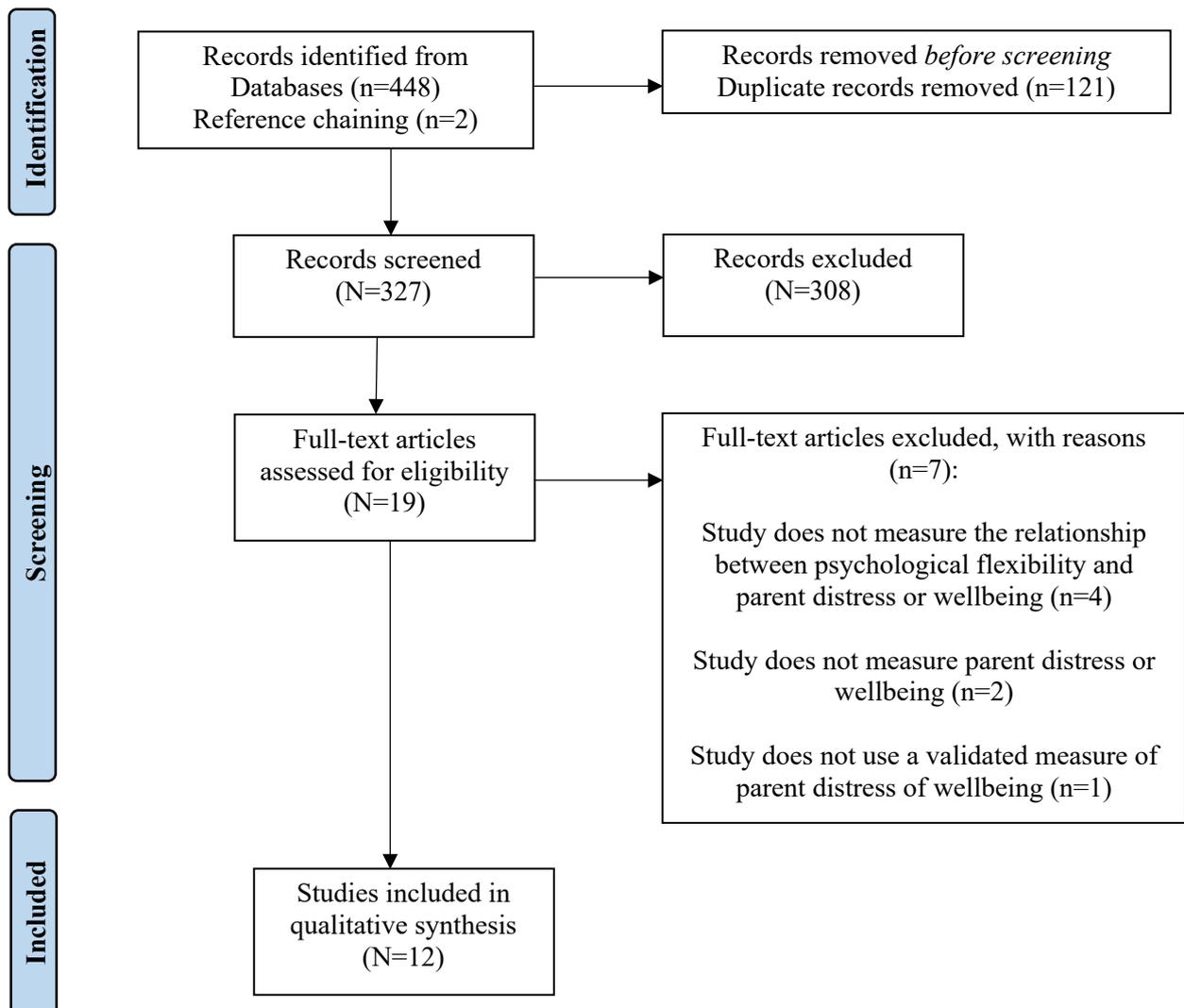
Search results from electronic databases were exported to the reference management software Zotero. Following the removal of duplicates, 327 articles remained. Titles and abstracts were reviewed according to inclusion and exclusion criteria, reducing the number of articles to 19. Articles where titles and abstracts were insufficient to accurately review against the inclusion and exclusion criteria were kept for full-text evaluation. Two additional publications were identified through reference list chaining. Four studies were excluded as they did not directly measure and report the relationship between PF and parental stress or wellbeing. Two studies were excluded as they did not include any measure of parental stress

or wellbeing. One study was excluded as it had created its own measure of parental stress or wellbeing for the purpose of the study, which was therefore unvalidated.

After applying inclusion and exclusion criteria, 12 studies remained. A PRISMA flow diagram reporting details of the search process is shown in Figure 1.

### **Narrative synthesis**

This systematic review uses narrative synthesis to consider the findings across the identified studies. Study characteristics of the selected papers are reported in Table 2 and study results, analyses and limitations are reported in Table 3.

**Figure 1***PRISMA Flow Diagram of Inclusion and Exclusion Procedure***Quality Assessment**

As the studies included in the final narrative synthesis were heterogenous in study design, quality was systematically assessed using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh et al., 2012). The QATSDD contains 16 reporting criteria on a scale from 0 to 3 (Not at all/Very slightly/Moderately/Completely) and the criteria applies to quantitative and qualitative studies. Fourteen of the sixteen reporting criteria were used and are reported in Table 1. Two items of the reporting criteria were

excluded as they are specific to qualitative designs. Scoring criteria for the reporting criteria can be found in Appendix C. Each paper was given a quality score, and the sum of these provided an overall score for the body of evidence. The scores enabled a comparison of quality between studies and determined what weight can be given to results from the synthesis. A random 25% sample of the studies were co-rated independently by a postgraduate doctoral student. Discrepancies were resolved through discussion to establish consensus for each study. Cohen's  $\kappa$  determined the inter-rater reliability of quality appraisals on 25% of papers to be moderate ( $\kappa = .609$ ,  $p < .01$ ) (McHugh, 2012).

### **Quality of studies**

Quality ratings ranged from 23 to 35 out of a possible 42. All studies addressed a clearly focused issue, with clear aims and rationale. Common causes of lower quality ratings included: relying solely on self-report measures (100%); no evidence of user involvement in the design (100%); limited or no consideration of sample size in terms of analysis (58%); and lack of clarity regarding the target group from which to base a representative sample (41%).

**Table 1**  
*QATSDD Quality Review of Mixed Design Studies*

Scoring Criteria	Benjamin et al. (2020)	Chong et al. (2017)	Daks et al. (2020)	Fonseca et al. (2020)	Fung et al. (2018)	Hannah and Woolgar (2018)	Kirby et al. (2019)	Moyer and Sandoz (2015)	Sairanen et al. (2018)	Sairanen et al. (2020)	Stotts et al. (2019)	Whittingham et al. (2019)
Explicit theoretical framework	3	3	3	3	3	3	3	3	3	3	3	2
Statement of aims/objectives in main body of report	3	3	3	3	2	3	3	3	3	3	3	2
Clear description of research setting	3	3	3	2	2	3	2	2	3	3	3	2
Evidence of sample size considered in terms of analysis	2	0	3	0	0	2	2	0	0	0	1	2
Representative sample of target group of a reasonable size	2	2	3	1	1	2	2	1	2	2	1	1
Description of procedure for data collection	2	2	3	3	1	2	2	2	2	2	2	1
Rationale for choice of data collection tool(s)	3	3	2	1	1	3	1	2	3	2	1	3
Detailed recruitment data	2	1	3	3	1	2	3	3	2	2	1	2
Statistical assessment of reliability and validity of measurement tool(s)	3	3	2	2	2	2	3	3	1	2	0	3
Fit between stated research question and method of data collection	2	2	2	2	2	2	2	2	2	2	1	2
Fit between research question and method of analysis	3	3	3	3	2	2	3	3	3	3	3	3
Good justification for analytical method selected	2	3	3	2	3	1	2	2	2	2	2	2
Evidence of user involvement in design	0	0	0	0	0	0	0	0	0	0	0	0
Strengths and limitations critically discussed	2	2	2	2	2	2	1	2	2	2	2	2
<b>Total</b>	<b>32</b>	<b>30</b>	<b>35</b>	<b>27</b>	<b>22</b>	<b>29</b>	<b>29</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>23</b>	<b>27</b>

**Table 2**  
*Study Characteristics*

Study; Country	Design; Purpose of the study	Participants; Mean age (yr); female (%)	Description of study	Relevant caregiver outcomes	QATSDD Quality Rating
Benjamin et al. (2020); USA	Within-group pre-post intervention design incorporating longitudinal analysis of PF and parental stress; To evaluate the influence of an ACT-based programme on psychological flexibility and pain catastrophising in parents of adolescents with chronic pain	268 parents of adolescents with chronic pain; 48.7 years; 90.3%	Parents completed questionnaires before and after a 3-week ACT-based parent programme, involving psychoeducation groups	Parents completed CES-D and PPFQ at two time points	32
Chong et al. (2017); Hong Kong	Cross-sectional correlational design: To evaluate how constructs including parent psychological flexibility, adjustment to child's illness and parents' mental health related to child's asthma morbidity	324 parents of children with asthma; 40.7 years; 88.3%	Parents completed questionnaires prior to commencing an ACT intervention aimed at parents of children with a diagnosis of asthma	Parents completed AAQ-II, DAS-21 and PECI	30
Daks et al. (2020); USA	Cross-sectional correlational design; To examine the link between parents' psychological flexibility and family functioning during COVID-19 pandemic	742 parents; 40.7 years; 71%	Parents completed online questionnaires in the week following 'stay at home' orders at the start of the COVID-19 pandemic to test a path model by which COVID-19 stress might impact family and child functioning	Parents completed MPFI and PHQ-9	35
Fonseca et al. (2020); Portugal	Cross-sectional correlational design; To explore the role of psychological flexibility within parenting in the relationship between parenting stress and parenting styles	250 parents; 37.5 years; 100%	Parents recruited in-person and online to complete questionnaires relating to psychological flexibility, anxiety and depression, parent stress and parenting styles.	Parents completed Portuguese versions of: AAQ-II, PAQ, HADS and Parenting Stress Scale	27
Fung et al. (2018); Canada	Within-group pre-post intervention study design incorporating cross-sectional analysis of PF and parental stress; To investigate processes of change in an ACT intervention for	33 parents of children diagnosed with ASD; 44.8 years; 100%	Parents of children with a formal diagnosis of ASD took part in a 1.5-day ACT workshop plus 4 weekly follow up sessions. Parents completed questionnaire measures at three time points.	Parents completed AAQ-II, CFQ-7, VLQ and DASS-21	22

Study; Country	Design; Purpose of the study	Participants; Mean age (yr); female (%)	Description of study	Relevant caregiver outcomes	QATSDD Quality Rating
	mothers of children with a diagnosis of ASD.				
Hannah and Woolgar (2018); UK	Cross-sectional correlational design; A proof of concept study to examine whether a model of compassion fatigue applies to foster carer populations	131 foster carers; mean age not calculated; 77.1%	Foster carers completed online questionnaires related to the study aims at one time point.	Foster carers completed ProQol, STSS and AAQ-II	29
Kirby et al. (2019); Australia	Cross-sectional correlational design; To examine the impact of shame on parenting style and the relationship between fear of compassion and shame	333 parents of children; 36.46 years (mothers), 37.74 years (fathers); 92%	Parents completed online questionnaires related to the study aims at one time point.	Parents completed AAQ-II and DASS-21	29
Moyer and Sandoz (2015); USA	Cross-sectional correlational design; To explore the relationships among parent distress, child distress, parent inflexibility and child inflexibility	71 parents; mean age not calculated, 90%	Parents and adolescents completed questionnaire measures related to the study aims at one time point.	Parents completed PAAQ and DASS-21	28
Sairanen et al. (2018); Sweden	Cross-sectional correlational design; To investigate whether processes related to psychological flexibility explain distress in parents of children with chronic conditions	75 parents of children with chronic conditions; 42.6 years, 81%	Utilised baseline data from a previous study investigating web-based interventions for psychological wellbeing among parents of children diagnosed with type-1 diabetes or functional disabilities.	Parents completed AAQ-II, FFMQ, CFQ-7, SMBQ and DASS-21	28
Sairanen et al. (2020); Sweden	Randomised control intervention design, incorporating correlational analysis of PF and parenting stress; To examine treatment processes in an RCT examining the effectiveness of guided online ACT for supporting the wellbeing of parents of children with chronic conditions	74 parents of children with type 1 diabetes or functional disabilities; 42.7 years; 81%	Utilised baseline data from an online ACT intervention for parents of children with chronic conditions. Data entered into a model to examine direct and indirect treatment processes of change	Parents completed SMBQ, DASS-21 and AAQ-II	28
Stotts et al. (2019); USA	Retrospective longitudinal design; To explore longitudinally the relations between early depressive symptoms	642 parents of babies admitted to NICU; 26.7 years; 100%	Secondary analysis of data collected as part of a two-group randomised control trial to assess motivational intervention to reduce NICU exposure to second-hand	Parents completed CES-D, AAQ-II and Perceived Stress Scale	23

Study; Country	Design; Purpose of the study	Participants; Mean age (yr); female (%)	Description of study	Relevant caregiver outcomes	QATSDD Quality Rating
	postpartum, psychological flexibility, and depressive symptoms later in the postpartum period among new mothers with an infant admitted to NICU		smoke post discharge. Questionnaire data collected from parents at three timepoints.		
Whittingham et al (2019); USA	Randomised control intervention design, incorporating correlational analysis of PF and parenting stress; An investigation into processes of change in a randomised controlled trial of parenting intervention and ACT	67 parents of children with cerebral palsy, 38.73 years; 97%	Utilised data from a previously published RCT consisting of three groups; a parenting intervention, a parenting intervention plus an ACT intervention, and wait list.	Parents completed AAQ-II and DASS-21	27

*Note:* SF-36 = 36-Item Short Form Survey Instrument, CES-D = Center for Epidemiological Studies-Depression scale, PPFQ = Parent Psychological Flexibility Questionnaire, AAQ-II = Acceptance and Action Questionnaire II, DASS-21 = Depression Anxiety Stress Scale 21, PECEI = Parent Experience of Child Illness, MPFI = 60-item Multidimensional Psychological Flexibility Inventory, PHQ-9 = Patient Health Questionnaire, ProQoL = Professional Quality of Life Questionnaire, STSS = Secondary Trauma Stress Scale, CFQ-7 = , Cognitive Fusion Questionnaire, VLQ = Values Living Questionnaire, FFMQ = Five Facet Mindfulness Questionnaire, SMBQ = Shirom-Melamed Burnout Questionnaire, PAQ = Parenting Acceptance Questionnaire, PAAQ = Parental Acceptance and Action Questionnaire, HADS = Hospital Anxiety and Depression Scale

**Table 3**  
*Results, Analyses and Limitations of Studies*

Study	Analysis of PF and parental stress	Relevant Covariates	Results	Limitations
Benjamin et al. (2020)	Hierarchical linear regression	Parent mental health at admission Parents chronic health symptoms Baseline psychological flexibility Pain catastrophising	Psychological flexibility significantly predicted lower depressive symptom scores (as measured by CES-D) for parents at 3-month follow-up, after accounting for parent physical and depressive symptoms at admission.	Sample: Lack of generalisability to community samples as sample focused on parents of adolescents experiencing high levels of pain severity and disability. No data given as to how many parents were screened but found ineligible for the study, meaning significant differences between responders and non-responders may have been missed Measures: Used only self-report measures Mechanisms: Lack of control group Data: In all regression models, a large proportion of the variance remained unaccounted for (64%-70%)
Chong et al. (2017)	Pearson's correlation coefficients	Parents' relationship with the child Parents' history of asthma Child's age	Poor psychological flexibility was significantly associated with increased depression, anxiety and stress (as measured by the DASS-21), after accounting for covariates	Sample: Cross-sectional sample means causality cannot be inferred. Generalisability of the conclusions are limited as the data were collected from one study site, a public hospital in Hong Kong. Measures: Used only self-report measures
Daks et al. (2020)	Path analyses	COVID-19 risk stress Stress from new demands Co-parenting discord Family discord Family cohesion Caustic parenting Constructive parenting Child distress	Parental inflexibility directly predicted greater parent depressive symptoms (as measured by PHQ-9) after accounting for covariates	Sample: Lack of diversity in sample (predominantly female, Caucasian, well-educated). Possible self-selection bias as sample recruited online Measures: Used only self-report measures.
Fonseca et al. (2020)	Pearson's correlation coefficients Path analysis	Educational level Income Child's gender	Parents were categorised into high or low psychological flexibility groups based on AAQ-II scores. Parents in the high flexibility group presented significantly lower levels of parenting stress (as measured by Parenting Stress Scale) and significantly higher levels of psychological flexibility within parenting, when accounting for educational level, income and child's gender. When using a path analysis model, higher levels of parenting stress were significantly and negatively associated with psychological flexibility within parenting. There was a significant relationship between two DASS-21 subscales (depression and anxiety) and parenting stress (as measured by the Parenting Stress Scale). Psychological flexibility (as measured by AAQ-II) was found to not be a mediator of change for stress or depression following the ACT intervention. After controlling for covariates, only Values Living Questionnaire was significant as a mediator for stress, and	Sample: Cross-sectional sample means causality cannot be inferred. Lack of diversity in sample (largely comprised of employed, educated mothers who were married/living with a partner). Possible self-selection bias as large proportion of sample recruited online Measures: Used only self-report measures Data: The alternative model developed to explore the relationship between parenting styles and parenting stress through psychological flexibility within parenting presented a poor model fit to the data.
Fung et al. (2018)	Within-subjects repeated measures ANOVA and MANOVA	Covariance between AAQ-II, VLQ and CFQ	Psychological flexibility (as measured by AAQ-II) was found to not be a mediator of change for stress or depression following the ACT intervention. After controlling for covariates, only Values Living Questionnaire was significant as a mediator for stress, and	Sample: Cross-sectional sample means causality cannot be inferred Measures: used only self-report measures.

Study	Analysis of PF and parental stress	Relevant Covariates	Results	Limitations
Hannah and Woolgar (2018)	Pearson's correlation coefficients	Gender Age Ethnicity Education Birth children Number of years fostering Type of placement Caring for child with learning disability	only Cognitive Fusion Questionnaire was significant as a mediator for depression Results indicate that psychological inflexibility was significantly and positively correlated to secondary trauma and burnout.	Sample: Cross-sectional sample means causality cannot be inferred. Possible self-selection bias as all participants recruited online. Mechanisms: did not control for covariates Measures: Measure of burnout comes from the ProQoL, not a specific measure of burnout. Used only self-report measures
Kirby et al. (2019)	Pearson's correlation coefficients	Parents' age Number of children	Results indicate that psychological inflexibility was significantly and positively correlated with depression, anxiety and stress (as measured by DASS-21)	Sample: Cross-sectional sample means causality cannot be inferred. Possible self-selection bias as all participants recruited online. Measures: used only self-report measures
Moyer and Sandoz (2015)	Pearson's correlation coefficients	None reported	Depression, anxiety and stress (as measured by DASS-21) in parents were positively correlated with psychological inflexibility	Sample: small sample size with a narrow demographic. Cross-sectional sample means causality cannot be inferred. No data given as to how many parents were approached but chose not to take part in study Measures: Used only self-report measures. Authors hypothesised that no measures of wellbeing such as life satisfaction or daily functioning means individuals who are highly avoidant may report less symptomology
Sairanen et al. (2018)	Pearson's correlation coefficients	Covariance between AAQ-II, CFQ and FFMQ	Psychological flexibility (as measured by AAQ-II) was a significant predictor of depression, anxiety, and stress (DASS-21) and burnout (SMBQ), after accounting for covariance between measures.	Sample: Cross-sectional sample means causality cannot be inferred. Measures: used only self-report measures Mechanisms: did not include child characteristic variables as covariates (e.g. child's age, gender, onset and the current conditions of the chronic disease)
Sairanen et al. (2020)	Structural equation model	Covariance between AAQ-II, CFQ and FFMQ	General psychological flexibility (AAQ-II) had no significant indirect effects on any of the outcomes. The study found that CFQ had a statistically significant indirect effect on stress, and FFMQ had statistically significant indirect effects on stress and burnout.	Sample: Cross-sectional sample means causality cannot be inferred. Narrow demographic with 81% of the sample made up of mothers Measures: used only self-report measures
Stotts et al. (2019)	Structural equation modelling	Income Marital status Education Perceived stress Birth weight Length of stay in NICU Treatment condition	Maternal depression at baseline was found to have a significant direct effect on mid-study psychological inflexibility. Mid-study psychological inflexibility was found to have a significant direct effect on maternal depression at 2-and-5 month follow ups, after accounting for covariates.	Sample: Sample used was a secondary analysis of a sample whose data were gathered for a trial to reduce second-hand smoke exposure in NICU infants' homes. Sample not representative of all NICU mothers as the trial selected for families with a smoker in the home. Measure: Used only self-report measures. Used a more general yet well-validated measure of depressive symptoms, the CES-D, rather than a specific postpartum depression measure such as the Edinburgh Postnatal Depression Scale. Mechanisms: Lack of control group
Whittingham et al. (2019)	Mediation analysis	None reported	Psychological flexibility significantly affected stress and reported depressive symptoms	Sample: Authors note that their sample size was limited and did not meet their target sample size calculated for adequate power

Study	Analysis of PF and parental stress	Relevant Covariates	Results	Limitations
				Measures: Used only self-report measures Mechanisms: Post-intervention measures were collected immediately after the intervention. The results from a planned follow-up at 6-months post-intervention was not reported on due to significant attrition

*Note:* CFQ-7 = Cognitive Fusion Questionnaire, VLQ = Values Living Questionnaire, AAQ-II = Acceptance and Action Questionnaire II, DASS-21 = Depression Anxiety Stress Scale 21, SMBQ = Shirom-Melamed

Burnout Questionnaire, FFMQ = Five Facet Mindfulness Questionnaire CES-D = Center for Epidemiological Studies-Depression scale

## **Main Findings and Narrative Synthesis**

Study publication dates were between 2014 and 2020. Eleven of the twelve papers were published within the past five years, further strengthening the case for this review as a timely and relevant piece of work. The papers originated from six different countries: USA, Hong Kong, Portugal, UK, Australia, and Sweden.

### **Design**

The majority of studies (N=7) utilised a cross-sectional correlational design, followed by within-group pre-post intervention design (N=2), randomised control intervention design (N=2), and retrospective longitudinal design (N=1). Recruitment was primarily face-to-face, with four studies recruiting and subsequently conducting their studies online, and one study using a mixed recruitment of part-online, part-face to face.

### **Participants**

Sample sizes ranged from 33 to 742. A significant number of studies did not report ethnicity data. For those that did, White European/American was consistently the most frequent demographic recruited. Ten studies reported the mean parent age, ranging from 26.7 to 48.7 years. The average percentage of mothers was 88.9%, ranging from 71% to 100%. Samples skewed towards parents with higher levels of reported educational attainment. Parents had children ranging from new-born (Stotts et al., 2019) to 20 years old (Fung, Lake, Steel, Bryce, & Lunskey, 2018). Most studies did not report mean child age.

### **Measures of PF**

All studies utilised self-report questionnaires for assessing PF. The most commonly utilised measure of PF was the Acceptance and Action Questionnaire-II (AAQ-II), which was used in nine studies. One study used the 60-item Multidimensional Psychological Flexibility Inventory (MPFI). Only two studies used parenting-specific measures of PF; the Parental Acceptance and Action Questionnaire (PAAQ), and the Parent Psychological Flexibility

Questionnaire (PPFQ). The predominance of generic PF scales is a potential limitation of the research base regarding PF and parenting, given the availability of context-dependent PF measures (Ong et al., 2019). In the context of parenting, it is possible that some parents may demonstrate high PF in one context, for example regarding their own distress, and at the same time struggle to be flexible in their interactions with others, including their children (Cheron et al., 2009).

### **Measures of Parental Outcomes**

There was great variation in how parental stress-related outcomes were measured. All measures of parental outcomes were based on self-report. Due to the relatively small sample of papers, in line with the inclusion criteria set out prior to reviewing identified articles, any studies that used measures of parent mental health in lieu of a specific parental stress measure were eligible for review. This was in line with Deater-Deckard's (1998) definition of parental stress, which encompasses parents' psychological wellbeing. Six studies used the Depression, Anxiety and Stress Scale (DASS-21). Two of those studies also included the Shirom-Melamed Burnout Questionnaire (SMBQ). Two studies used the Center for Epidemiological Studies – Depression Scale (CES-D), with one of these studies also using the Perceived Stress Scale (PSS). One study, which focused on a foster carer population, used both the Professional Quality of Life questionnaire (ProQoL) and the Secondary Trauma Stress Scale (STSS). One study used the Patient Health Questionnaire (PHQ-9). The only study to include a dedicated measure of parenting stress was Fonseca, Moreira, and Canvarro (2020) who used the Parenting Stress Scale (PSS), alongside the Hospital Depression and Anxiety Scale (HADS).

### **Relationship between PF and Parental Outcomes**

The relationship between PF and parental stress or wellbeing outcomes was assessed in all 12 studies. The majority of studies (N=10, QATSDD mean rating = 28.8) reported a

significant positive association between PF and parental stress or wellbeing outcomes. Two studies compared a high PF group to a low PF group. Fonseca et al. (2020) found that higher PF in mothers was associated with significantly lower levels of parenting stress and higher PF within parenting. This study scored a moderate quality rating, providing a thorough description of recruitment and data collection, and having clearly stated aims. Daks, Peltz, and Rogge (2020) found that psychological inflexibility, but not psychological flexibility, was predictive of parents experiencing higher levels of COVID-19 related stressors. This study obtained a high quality rating, utilising a broadly representative sample and providing good justification for their method of analysis. Utilising PF measures this way suggests possible merit in dichotomising PF into high/low rather than measuring continuously.

Three studies (Benjamin, Harbeck-Weber, Ale, & Sim, 2020; Stotts et al., 2019; Whittingham, Sanders, McKinlay, & Boyd, 2019) reported a relationship between PF and parental outcomes when measured over multiple time points. These studies utilised multiple time points to assess changes in their study variables either following an intervention or to track natural changes over time. Benjamin et al. reported PF uniquely predicted improved mental health outcomes at 3-month follow up, following participation in an ACT intervention aimed at parents with a child experiencing chronic pain. They reported that the 'emotional acceptance' subscale of the PF measure they utilised uniquely predicted levels of depressive symptoms in parents at follow-up. This remained after controlling for factors associated with negative parent outcomes, such as physical symptoms and quality of life. This study obtained a high quality rating, demonstrating a good rationale for their approach to data collection tools and analysis. Stotts et al. (2019) studied a sample of mothers with medically vulnerable infants requiring NICU treatment at birth. They found that while depressive symptoms early in the postpartum period were directly associated with depressive symptoms later in the postpartum period, after controlling for covariates, higher PF 2-3 weeks post-

NICU discharge fully mediated this relationship at 2-month follow up. At 5-month follow up, higher PF partially mediated the relationship between earlier and later depressive symptoms. These findings indicate that increased PF is related to positive parental outcomes, even following a potentially threatening and likely highly stressful experience. This study obtained a moderate quality score and was limited by performing a secondary analysis on data related to second-hand smoking, meaning the sample was not representative of all NICU mothers. Finally, Whittingham et al. (2019) collected PF and parental-stress related outcome measures pre, and immediately post, an ACT intervention for parents. They reported that PF was associated with the depression and stress subscales of the DASS-21. This study obtained a moderate quality rating. A limitation reducing its rating was the study's relatively small sample size of 67, which was limited in its representation of the study's target population and did not meet the threshold of their power calculation. All three studies measuring PF over time were limited somewhat by their relatively short follow-up period. However, taken together, they do provide partial evidence for PF's causal role in impacting parental stress outcomes.

Five studies found a relationship between PF and parental stress-related outcomes in parents of children with a health condition. The conditions were: chronic conditions (N=3); asthma (N=1); and cerebral palsy (N=1). Four of these papers found a significant relationship between PF and parental stress-related outcomes. Two of those papers (Sairanen, Lappalainen, & Hiltunen, 2018; Chong, Mak, & Loke, 2017) utilised the baseline measures of an ACT intervention for parents, and two previously discussed papers (Benjamin et al., 2020; Whittingham et al., 2019) tracked the relationship over time. Sairanen et al. found that, in parents of children with chronic conditions, a higher AAQ-II score was the only significant predictor of burnout (measured by the SMBQ) and depression, anxiety and stress (measured by the DASS-21) in their tested models that included other ACT outcomes (e.g., cognitive

defusion, mindfulness). This study obtained a high quality score, providing a good rationale for its analysis. Chong et al. reported that lower PF was significantly associated with increased depression, anxiety and stress (as measured by the respective DASS-21 subscales) in parents of children with an asthma diagnosis. The correlation was strongest between the measure of PF (AAQ-II) and the DASS-21 stress subscale. They also reported that poorer PF was significantly associated with poorer adjustment to the child's illness in parents. They obtained a high quality rating, utilising a large sample size of 324. Taken together, these studies indicate PF is related to parental stress in clinical samples.

One study, Hannah and Woolgar (2018), used a foster carer sample, and reported psychological inflexibility was significantly and positively correlated to secondary trauma and burnout. To reflect the distinct nature of the fostering role, the study utilised measures that had a professional focus; the Professional Quality of Life questionnaire (ProQoL) and the Secondary Trauma Stress Scale (STSS). The significant relationship between PF and stress measures for foster carers implies that the relationship between PF and parental stress could extend into other parental contexts outside of the traditional biological parent-child dyad. This study obtained a high quality rating, with evidence of sample size calculations being conducted prior to data collection. However, they were limited by not controlling for important covariates that may have impacted on PF or wellbeing outcomes, such as socioeconomic status (SES) or caring for a child with additional needs.

Kirby, Sampson, Day, Hayes, and Gilbert (2019) was concerned with wider parenting themes of shame and compassion, utilising a large sample of 333 parents who completed an online survey. They reported that lower PF was positively associated with higher scores of parent stress outcomes (as measured by the DASS-21), reporting a particularly strong correlation between the two measures ( $r=.699$ ). This study obtained a high quality score owing to its large sample size. This study was unique amongst the studies identified by this

review, as it did not hypothesise a relationship between PF and parental stress outcomes in its study aims.

Two studies, Fung et al. (2018) and Sairanen, Lappalainen, Lappalainen, and Hiltunen (2020), did not report a significant association between PF and parental stress outcomes. Both studies found that other measures of ACT processes were significantly associated with parental outcomes. Sairanen et al. (2020) reported that general PF (measured using AAQ-II) had no significant indirect effects on burnout, depression, anxiety or stress. They did find a statistically significant indirect effect between the Cognitive Fusion Questionnaire and stress (as measured by the DASS-21 stress subscale), and the Five Facet Mindfulness Questionnaire on stress and burnout. This study obtained a high quality rating. A limitation of this study that reduced its rating was having a relatively small sample size of 74. Fung et al. (2018) reported that PF did not mediate changes in parental stress outcomes (as measured by the DASS-21 total score) when examined individually across three time points. They did find a significant positive relationship between Values Living Questionnaire and the DASS-21 stress subscale, and the Cognitive Fusion Questionnaire and DASS-21 depression subscale. This study obtained a moderate quality score, utilising a small sample of 33 parents and providing limited details into recruitment and data collection procedures. Both studies hypothesised that the insignificant finding between PF and parental stress could have been the result of utilising a general measure of PF, rather than a context-specific measure.

### **PF in comparison to other constructs**

Two studies compared PF to other variables associated with parental stress. Benjamin et al.'s (2020) findings from their multiple regression analyses suggested that after controlling for other variables at admission linked to parental mental health outcomes, such as depressive symptoms, quality of life, physical symptoms, and catastrophizing, change in

parent psychological flexibility uniquely predicted improved parent mental health and quality of life at follow-up. Similarly, Stotts et al. (2020) reported that PF fully mediated the relationship between depressive symptoms at the first and second time point, after controlling for other factors previously found to be predictive of postpartum depression. These factors included perceived stress. These studies add weight to the potential unique role PF has in parental mental health outcomes, however there was insufficient exploration of alternative variables linked to parental stress in the papers included in this review to draw conclusions regarding its comparability to other variables.

### **Parenting**

Three studies (Fonseca et al., 2020; Whittingham et al., 2019; Daks et al., 2020) found a relationship between PF and aspects of parenting style. Fonseca et al. (2020) examined PF as a mediator between parental stress and problematic parenting styles. They reported that PF within parenting was positively and moderately associated with the use of an authoritative (more favourable) parenting style, and negatively associated with the use of both permissive and authoritarian (both less favourable) parenting styles. Whittingham et al. (2019) found that PF was a significant mediator between the type of intervention a parent received and parental over-reactivity. This meant that, irrespective of the intervention group parents were placed in, higher PF resulted in lower parental over-reactivity. Daks et al. (2020) reported that higher PF was associated with greater use of constructive parenting styles. These studies were all moderate to high quality. They link to a wider research base that implicates parenting stress as an influencer on parenting style (Venta et al., 2016; McMahon & Meins, 2012; Rodriguez & Green, 1997).

One study was concerned with parent flexibility as it relates to the relationship between parent and child distress. Moyer and Sandoz (2015) reported that lower PF was positively and significantly associated with higher levels of depression, anxiety and stress

symptoms (as measured by the DASS-21 subscales) in parents of adolescents in a community sample. They also found that PF in parenting (as measured by the PAAQ) acted as a moderator between parent and adolescent distress measures. This study received a high quality rating owing to its detailed recruitment strategy and use of a parenting-specific measure of PF. It was limited by a relatively small (N=71) and demographically homogenous sample.

### **Covariates**

Two studies included factors relating to socioeconomic status (SES) as covariates. Fonseca et al. (2020) included parent education level and income as covariates in their path analyses model. The reported relationship between PF and parental stress remained when controlling for these covariates. They also conducted bivariate correlations between their study variables and found that income was significantly correlated with anxiety and distress symptoms, but not PF. Stotts et al. (2019) also included factors related to SES as covariates in their analyses and found the relationship between PF and parental stress measures remained when accounting for these. They reported that lower income was related to higher depressive symptoms, but not PF, at 5-month follow up.

### **Discussion**

The current review sought to provide a more comprehensive understanding of the relationship between PF and parental stress. This is important as PF has been established as a key factor in psychological health (Kashdan & Rottenberg, 2010), and parental stress has been implicated in negative child outcomes, including impacting children's mental health and cognitive development (Hattangadi et al., 2020; Deater-Deckard et al., 2016; Ward & Lee, 2020). The aims of this review were to identify and summarise the literature regarding PF and parental stress (and related constructs), assess the quality of the identified studies, provide conclusions about the extent to which there is evidence for an association between

PF and parental stress or mental health, and consider the potential clinical implications of the review findings.

Regarding the first aim concerning identifying and summarising the relevant literature, there were consistent themes identified in this review. Firstly, the majority of studies included in this review (N=7) were correlational in design, limiting the ability to draw causal conclusions about the evidence base. Secondly, samples were relatively homogenous across the studies. Most samples included only mothers, with fathers making up just 11.1% of participants across all studies. The majority of samples were based in Western countries (N=11) and were skewed towards parents with high levels of educational attainment. Taken together, the sample characteristics suggest that while the findings of this review are generalisable to educated mothers from Western countries, further research in more diverse samples is needed. Regarding measures, while only four different PF measures were used across the twelve studies, most papers (n=9) utilised general, rather than context-specific, measures of PF. Although general measures of PF are widely used, Ong et al. (2019) suggests that due to their more specific wording, context-dependent measures may be more sensitive to detecting PF in particular domains of interest. There was greater heterogeneity across the measures of parental stress, with nine different measures utilised across the twelve studies, and hence the findings presented here necessarily relate to a very wide definition of “parental stress” encompassing the constructs of parental and general stress, burnout, mental health symptoms (e.g., primarily anxiety and depression) and poor general mental wellbeing. Fonseca et al. (2020) was the only study to include a measure specific to parental stress. The lack of specific parental stress measures was an unexpected finding given the availability of specific parental stress measures (e.g. the Parenting Stress Index; Abidin, 1997).

The second aim of this review was to assess the quality of the identified studies.

Overall, the methodological quality of the studies that reported a relationship between PF and

parental stress were moderate to high (mean QATSDD score = 28.8, range 23–35). Six studies benefited from particularly large sample sizes (range of N=250 to N=742). Findings were consistent across a range of settings, including child chronic health and foster care. All studies included in this review drew from an established theoretical framework from which to base their aims and conclusions. However, a notable limitation across all the studies included was relying solely on self-report measures, with no studies utilising diagnostic interviews or behavioural tasks to further understand PF or parental outcomes. Self-report measures of PF have come under recent criticism, with dynamic methods such as daily diary studies suggested as an alternative to capture the personalised, contextual nature of the PF construct (Cherry et al., 2021). The variation in measures utilised by the studies also limits the generalisability of the findings to some extent. The studies were also limited by the relatively narrow demographic in which they took place and the wide variation in the measurement of parental outcomes. Where a significant association between PF and parental stress was not found (N=2, Fung et al., 2018; Sairanen et al., 2020), consideration of the likely reasons for the differential findings indicated that these studies were not of a higher quality and may have been underpowered. Differential outcomes were also not impacted by utilisation of parenting-specific measures of PF as opposed to general measures, age of the child, or type of parental stress outcome measure, as these factors varied across all studies. While the findings of this review should be interpreted in the context of the limitations raised, overall, all studies included in this review were of medium or high quality. This means that conclusions made below about the relationship between PF and parental stress are based on a reasonably strong evidence-base.

The third aim of this review was to provide conclusions about the extent to which there is evidence for an association between PF and parental stress or mental health. The majority of studies (N=10, 84%) reported a significant association between PF and parental

stress and related variables, and these effects remained when controlling for relevant confounding variables. Several studies implicated PF as a mediator between two variables of interest, for example, between a stressful life event, such as a newborn being admitted to NICU, and later postnatal depression (Stotts et al., 2019), or between a parenting intervention and parenting style (Whittingham et al., 2019). Overall, the review evidences a likely relationship between PF and parental stress. While the directionality of the relationship between the two variables cannot be concluded in this review, four studies did use pre-post measures to understand the relationship between PF and parental stress over time. Three of these studies found a significant relationship between PF and parental stress-related outcomes, for example higher PF was predictive of improved mental health outcomes at 3-month follow-up (Benjamin et al., 2019), and higher PF measurements at hospital discharge fully mediated postnatal depression at 2-month follow up (Stotts et al., 2019). This further adds to the need for more longitudinal research, as while the results are promising, both studies utilised relatively short follow-up periods limiting the conclusions that can be drawn regarding PF and parental stress over time.

The review identified two studies drawing distinct findings between psychological flexibility and inflexibility. While PF is linked to wellbeing, psychological inflexibility is linked to difficulties in connecting with the context of a situation and in choosing behaviour that is in line with ones values (Ciarrochi et al., 2010). Fonseca et al. (2020) and Daks et al. (2020) split their sample according to flexibility (high or low flexibility, and flexible or inflexible, respectively) and found differing results dependent on the group. While it could be assumed that these concepts are opposite poles of a single dimension, emerging evidence has suggested defining them as two related, yet distinct, constructs. Rogge et al. (2019) found that the dimensions of inflexibility were more tightly associated with the negative outcome of depressive symptoms whereas the dimensions of flexibility had a greater association with the

positive outcomes of wellbeing and life satisfaction. This distinction could be important when intervention planning, as they suggest addressing rigid and inflexible coping styles could lead to negative symptom relief, whereas cultivating engagement in flexible skills could lead to helping clients develop full and rewarding lives. This could enable greater alignment of treatment outcomes with the specific goals of the client group.

When attempting to isolate the impact of PF on parental stress, it is imperative to consider other stressors potentially impacting parental stress. As previously discussed, a range of environmental, relational and individual difference factors can all impact parental stress (Cornish et al., 2006; Östberg & Hagekull, 2000; Liang et al. 2019). While many studies included relevant covariates in their analyses, there were a wide range of covariates across the studies, possibly reflecting the variety of factors implicated in parenting outcomes. Two studies included factors relating to SES as covariates, and both studies found that the relationship between PF and parental stress was significant even when controlling for these factors. Factors relating to SES are important covariates when considering parental stress, as the Family Stress Model posits conditions of poverty, such as lack of financial resources and exposure to economic hardships, lead to stressors and dysfunction within the family system (Conger & Conger, 2002; Justice et al., 2019). The findings seem to be in line with wider research implicating parent distress and mental health as a mediator between SES and parenting outcomes (Luthar & Latendresse, 2005), further strengthening PF as a target for parenting interventions given the findings of this review.

Although not an aim of this review, an interesting observation from the identified literature was the inclusion of parenting style as a variable linked to PF and parental stress. A common theme emerging from the three studies that investigated parenting style was that of lower PF being linked to parental over-reactiveness. When considering the core tenets of PF as centring around acting in line with one's values and adapting to context-dependant

demands, it would make sense that lower PF could result in parenting behaviour that is reactive and potentially not aligned to one's values. This is in line with the wider research base that indicates greater parenting stress is associated with negative parenting behaviours (Venta et al., 2016; McMahon & Meins, 2012; Rodriguez & Green, 1997). Indeed, emerging evidence has begun to explore the links between PF and attachment theory, with one study finding lower PF correlates with attachment anxiety (Salande & Hawkins, 2016). The interaction between these two concepts warrants further investigation, as better understanding the interplay between parental stress, PF and parenting behaviour would be important for parenting interventions focused on child outcomes.

### **Clinical Implications**

Parents experiencing high stress (and related mental health and wellbeing difficulties) are more likely to display lower levels of parental sensitivity, administer harsher discipline, and exhibit hostility towards their children (Ward & Lee, 2020; Venta, Velez & Lau, 2016; McMahon & Meins, 2012). Unsurprisingly, these factors can contribute to adverse child outcomes including cognitive development and children's prosocial behaviour (Hattangadi et al., 2020; Deater-Deckard et al., 2016). Therefore, the final aim of this review was to consider the potential implications of the findings for the development of interventions for parental stress. Whilst this review does not confirm PF as a causal factor in parenting stress, this review certainly raises the possibility that increasing PF in parents could have a positive impact on parental stress.

One intervention modality for parents that is already targeting PF is ACT. ACT-informed interventions have shown promising outcomes in lowering stress and improving mental health in non-parenting contexts, with PF identified as a key mechanism of change (Fledderus et al., 2013). A review into ACT for family caregivers, which included parents and family carers of relatives with mental health diagnoses or dementia, found that ACT had

small to moderate effects on stress and other mental health outcomes (Han et al., 2020). Indeed, a recent review has shown ACT-informed interventions widely report improvements in parent-reported measures of stress, depression, and anxiety (Byrne et al., 2021). This review adds to the understanding of the processes of change that can lead to positive outcomes in such interventions.

Studies on PF in parenting have indicated that it may be beneficial to promote both general and parenting-specific PF in parenting interventions, to ensure the benefit of increased PF is translated to the parenting role (Brassell et al., 2016). While the current review was unable to make a distinction between the effects of parenting-specific PF and general PF due to the limited number of studies utilising parenting-specific measures of PF, this may warrant further consideration when intervention planning for parents.

### **Research Implications**

This systematic review identified a number of gaps in the literature. While this review focused on within-parent relationships, further research could examine how these parent variables relate to child outcomes. This research would link into a wider research base examining individual PF within the family context, where there is evidence for a relationship between a parent's PF and their children's psychological outcomes (Cheron et al., 2009; Brassell et al., 2016). Research focused on synthesising these findings would be a valuable addition to the research base.

Future research could explore the role of PF in more diverse populations. Only one study included in this systematic review, Chong et al. (2017) took place within a non-western population, and White European/American was consistently the most frequent demographic recruited to the studies. This suggests a relatively homogenous population from which to draw conclusions regarding the relationship between PF and parental stress. Exploring the cross-cultural relationship of PF and parental stress could be particularly timely given recent

validation of a well-used PF measure across Eastern cultures (Lin, Rogge, & Swanson, 2020). Lin et al. highlighted that despite the notable differences between Eastern and Western cultures, the constructs measured by the PF measure they were validating retained notably consistent meanings across those cultures.

Future studies would benefit from further investigating PF as a mechanism for change in ACT interventions with parents. As highlighted by this study, the majority of ACT interventions that were captured by this study take place within a child health context. Future research could explore whether increasing PF in parents, through ACT interventions, reduces parental stress in a range of clinical samples, and normative community samples.

### **Strengths and Limitations**

The present review has a number of strengths and limitations. To the author's knowledge, this is the only review to systematically review the relationship between PF and parental stress. Broad search terms ensured all relevant papers were captured. Including only studies which utilise validated measures of parental stress and PF strengthens the validity of the study, as it reduces the risk of bias from studies based upon unvalidated tools or unstructured clinical judgements. The subjectivity of the quality review was mitigated somewhat by demonstrating high inter-rater reliability. Limitations include only reviewing articles published in English, meaning studies which could have included relevant information but were published in other languages were not synthesised. This review only considered published studies for inclusion, and while this meant studies were of adequate quality for review, it risks a publication bias that may skew the findings. Due to lack of resources, this systematic review was unable to source an independent checker at the identification and data extraction stage. This may have introduced personal bias in the selection of articles included for screening and limit the interpretation of the findings.

## Conclusion

This review systematically summarises the evidence and quality of studies investigating the relationship between PF and parental stress. This has important clinical implications, due to the far reaching impact parental stress can have on children's mental health and cognitive development (Hattangadi et al., 2020; Ward & Lee, 2020). The review incorporated a range of study designs and validated measures of PF and parent stress, due to the limited number of studies investigating this relationship. Overall, the review demonstrates strong evidence for a cross-sectional relationship between PF and parental stress, although there was partial evidence of a causal role from the few longitudinal studies conducted. More longitudinal research in the future is recommended, exploring the links between PF and parental stress over time and in terms of child outcomes.

## Declaration

The present study was prepared as part of the lead authors Doctorate of Clinical Psychology (DClinPsy) thesis. The author reports no conflicts of interest to declare.

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**Psychometric properties and Validity of the Screen for Child Anxiety Related  
Emotional Disorders: Parent Version (SCARED-P) in an Early Childhood Sample**

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### Abstract

The Screen for Child Anxiety Related Emotional Disorders: Parent Version (SCARED-P) was originally developed for use in middle childhood and adolescence. The present study examined the psychometric properties and validity of the SCARED-P in an early childhood sample (predominantly aged 4-7 years old). The 41-item version of the SCARED-P was administered to the parents of 233 children referred to a research centre with emotional and behavioural difficulties identified by their teacher (mean age = 6.31, SD 1.08; females = 34.3%). Confirmatory Factor Analysis provided mixed support for the original five-factor model of the SCARED. The SCARED-P demonstrated moderate to high internal consistency (total  $\alpha = .94$ , subscale  $\alpha = .68$  to  $.89$ ), and showed good construct validity with relevant diagnostic interview and questionnaire measures. Higher total scores on the SCARED-P were related to more successful risk taking on a risk decision-making task. These findings suggest overall initial support for the SCARED-P's utility as a measure of anxiety in early childhood, but further psychometric and validation studies are needed in larger community-based samples.

*Keywords:* Screen for child anxiety related emotional disorders; Anxiety disorder; Psychometric; Child Development; Early Childhood

## **Psychometric Properties and Validity of the Screen for Child Anxiety Related Emotional Disorders: Parent Version (SCARED-P) in an Early Childhood Sample**

Anxiety can be defined as a feeling of unease, such as worry or fear, that can range from mild to severe. It is a feeling universally experienced and can be adaptive in facilitating danger avoidance (Beesdo, Knappe, & Pine, 2009). According to the Diagnostic and Statistical Manual of Mental Disorders (5<sup>th</sup> ed.; DSM-5; American Psychiatric Association [APA], 2013), anxiety becomes disordered when it has been present for at least 6 months, is associated with a set number of common anxiety symptoms (e.g., edginess or restlessness, irritability, difficulty sleeping), is difficult to control, and causes significant distress or impairment on daily functioning. Anxiety disorder is an umbrella term for a number of sub-classifications, including generalized anxiety disorder, social anxiety disorder, and panic disorder (APA, 2013).

Anxiety disorders are one of the most common childhood psychological difficulties (Hirshfeld-Becker et al., 2010), with an estimated prevalence of between 9% and 32% across childhood and adolescence (Creswell, Waite, & Cooper, 2014). It is possible that anxiety rates in younger children are underestimated due in part to symptoms not being organised into clear and traditionally recognisable patterns that would lead to a diagnosis (Whalen, Sylvester, & Luby, 2017). The prevalence of childhood anxiety is further complicated by the differing presentations of internalising and externalising disorders in children. Internalising disorders typically appear as anxiety, withdrawal and sad affect, whereas externalising problems usually take the form of overt disruptive behaviours such as aggression, defiance and hyperactivity (Campbell, 1995). As parent and teacher reports often form a key part of diagnostic assessments in children, internalising problems, being less observable, may not be picked up as easily as externalising problems (Wu et al., 1999).

The risk of developing an internalising disorder in early childhood has been linked to several psychosocial and child characteristics, including family environment, child temperament, peer relationships and stressful life events (Whalen et al., 2017). Some evidence has suggested anxiety disorders in childhood are strong predictors of later adolescent or adult anxiety disorders, major depression, substance abuse and educational underachievement in adulthood, especially when the childhood anxiety has been poorly managed (Isolan, Salum, Osowski, Amara, & Manfro, 2011; Benjamin, Harrison, Settipani, Brodman, & Kendall, 2013). Hence, the assessment and treatment of anxiety during the early stages of childhood are important topics of preventative clinical psychology and psychiatric research.

Childhood anxiety disorders are associated with impairments across all aspects of daily life, including academic, social and family functioning (Hirshfeld-Becker et al., 2010). Functioning is typically impaired by a heightened attention to perceived risks, resulting in maladaptive avoidance behaviours (Maner & Schmidt, 2006; Okon-Singer, 2018). Particular anxiety disorders have been linked to tendencies to overestimate the likelihood or distress intensity of anxiously anticipated events (Beckers & Craske, 2017; Gilboa-Schechtman, Franklin, & Foa, 2000). This is developmentally problematic for young children who are encountering new situations regularly, such as starting school, making friends and attending birthday parties. One of the founding models of anxiety indicates the role of avoidance in negatively reinforcing anxious arousal and cognition, therefore acting as a maintaining factor (Mowrer, 1960). Similarly, recent research has indicated experiential avoidance (the unwillingness to remain in contact with aversive experiences, and action taken to alter the aversive experiences or events that elicit them) is also integral in anxiety maintenance (Spinhoven et al., 2017).

Following infancy, childhood development is conventionally considered to be comprised of three overlapping phases ('early childhood', up to around the age of 7; 'middle childhood', from around 8-12 years old; and then 'adolescence'). Despite the prevalence and impact of childhood anxiety, assessment methods are complicated by some symptoms of anxiety disorders being developmentally common at different phases; for example, separation anxiety at 12 to 18 months, a fear of thunder or lightening at 2 to 4 years old, or school anxiety at 5 to 7 years old (Beesdo et al., 2009). Although developmental considerations are necessary when considering the clinical significance of mild to moderate anxiety symptoms, when symptoms cause prolonged marked distress or interference in functioning, in clinical practice they are commonly considered clinically significant regardless of age (Langley, Bergman, and Piacentini, 2002). Indeed, the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; APA, 2013) allows for the diagnosis of several anxiety-related disorders in infancy and early childhood (Separation Anxiety Disorder, Panic Disorder with and without Agoraphobia, Social Phobia, Obsessive Compulsive Disorder, Acute Stress Disorder, Posttraumatic Stress Disorder, and Generalized Anxiety Disorder).

The prevalence, impact and potential trajectory of childhood anxiety suggests a need for a valid questionnaire measures that can detect clinically significant anxiety in early childhood, which can be used in both clinical practice and research. However, the available childhood anxiety measures were developed, standardised and validated with older children or adults, including the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings & Conners, 1997); State-Trait Anxiety Inventory for Children (STAIC; Spielberger, Edwards, & Lushene, 1973); and the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al, 1997). Relevant scales that have been developed and validated in both early and later phases of childhood include the Child Behaviour Checklist (CBCL; Achenbach, 1991) and the Strengths and Difficulties

Questionnaire (SDQ; Goodman, 2001); however, these merely have anxiety-related subscales which do not assess for a wide range of anxiety disorder symptoms. In a review of the most commonly used measures for anxiety in childhood, Langley et al. (2002) summarised measures of anxiety in childhood. Their review did not include any measure for anxiety in children under the age of 6, aside from a school refusal measure for children aged over 5 which was limited in capturing the breadth of anxiety symptoms that a young child might experience.

Measurement of child anxiety is typically through child report, parent report, or a combination of the two. For younger children, although they are able to report on basic symptomology through developmentally appropriate measures, their reports of abstract or complex symptomology will often present validity concerns (Luby, Belden, Sullivan & Spitznagel, 2007). In general, parents and/or teachers play a more central role in the assessment of any symptoms of impairment than among older children, as younger children often overlook interference or impairment of symptoms on their home life, school, and peer relationships (Luby et al., 2007). Parent or teacher observation and understanding of children's emotional difficulties may be limited by the environments in which they interact with their child. For example, a parent may have a good understanding of symptomology at home, but not at school (Smith, 2007). While discrepancy between parent and child reports have been identified (De Los Reyes & Kazdin, 2004; Choudhury, Pimentel, & Kendall, 2003) parents do still play an integral role in the assessment of child emotional difficulties, especially for younger children.

The current paper focuses on one of the aforementioned anxiety questionnaire measures for children, the SCARED, which was developed by Birmaher et al. (1997). The SCARED was originally designed to screen for anxiety disorders in children aged 8–18 years and includes parallel parent and child versions. The parent and child versions of the

SCARED show moderate agreement (Runyon, Chesnut, & Burley 2018), making it a useful tool when child data is difficult to obtain due to such issues as cognitive impairment, oppositionality, lack of child availability, or for children who do not yet have the required cognitive abilities to complete such a measure. The scale consists of 41-items comprising five factors: panic/somatic; generalized anxiety; separation anxiety; social phobia; and school phobia. When the measure was first created, the first four factors correspond to its DSM-IV counterpart diagnoses (Birmaher et al., 1997). This has been complicated somewhat by the publication of DSM-5, where changes were made to operational definitions of the disorders. Despite this, Chan & Leung (2015) suggest the original version of the SCARED continues to be appropriate for assessing child and adolescent anxiety symptoms, as the core features related to the classification of anxiety disorders remain unchanged.

The SCARED has been well validated in middle childhood and adolescence (Runyon et al., 2018). Runyon et al.'s (2018) meta-analysis analysed 65 studies and concluded that the internal consistencies for both the parent (SCARED-P) and child versions were excellent. The tool has also been well-validated cross-culturally (Hale, Raaijmakers, Muris, & Meeus, 2011; Isolan et al., 2011; Su, Wang, Fan, & Gao, 2008). Of note, Hale et al.'s (2011) meta-analyses of the SCARED's found that the majority of studies that included the examination of the original five-factor structure found the structure to be supported in their cross-cultural samples.

Runyon et al. (2018) identified that of the 65 studies that they analysed using the SCARED, most used samples of children aged 8 and over. One study included in their review utilised the SCARED with children aged 6 years old (Weitkamp, Romer, Rosenthal, Wegand-Grefe, & Davies, 2010) and 8 studies included children aged 7 and over. Of these studies, no limitations were raised to highlight difficulties in utilising the measure with a younger than originally intended sample. In fact, other studies have found that age has a limited impact on

childhood anxiety measures. Langley, Bergman, McCracken, and Piacentini (2004) did not find a relationship between age and the Child Anxiety Impact Scale-Parent version (a narrower measure of anxiety than the SCARED, covering school, social, and home/family anxiety symptoms), and concluded that their measure functioned similarly well in the 4-8 year old subsection of their sample as it did with their older child sample (up to 17-years-old).

The robust validation of the SCARED in middle childhood, paired with its well-established factor structure, make the measure a strong contender for its use in younger children. In a younger age group, though, it is likely that only the parent version will be valid given the range of symptoms covered in the SCARED. For these reasons, there is justification to formally investigate the psychometric properties and validity of the SCARED: parent version (SCARED-P) in an early childhood sample. If the SCARED-P were found to be valid in early childhood, this could have helpful clinical implications (e.g., to aid screening for anxiety disorders in early years clinical or education settings) and research implications (e.g., tracking anxiety over time in longitudinal studies using a consistent measure from early childhood onwards). It would also negate the need to develop entirely new broad questionnaire measures of anxiety in early childhood.

Another worthy area of exploration for child anxiety is its impact on risk related decision-making. Research suggests that sensitivity to risk and resultant avoidance is specifically linked with anxiety rather than negative affect more generally (Maner et al. 2007). Further, anxiety has been related to improved performance on some risk-taking tasks due to heightened sensitivity to the risk-related outcomes of the various choices that they can make. For example, individuals with generalized anxiety disorder learnt to pick from a deck of cards with fewer losses on the Iowa Gambling Task (Mueller, Nguyen, Ray, & Borkovec, 2010). As outlined, anxiety has an impact on behaviour typically through the heightened

sensitivity to risk which can result in maladaptive risk avoidance (Lorian & Grisham, 2010). It is hypothesised that risk avoidance tendencies are linked to *perceived* severity, but not likelihood, of negative outcomes (Maner et al. 2007). In adults, habitual risk avoidance is a central focus of cognitive anxiety disorder theories (Barlow, 2002; Giorgetta et al., 2012; McNally, 2001).

Validation studies of anxiety questionnaires typically involve comparison with other anxiety measures but can often lack validation against observed anxiety-related behaviours, such as those that involve making judgements about risk. Although self-report measures for risk-taking behaviour exist, the use of experimental behavioural tasks may be better able to assess real-world risk-related decision making (Jentsch, Woods, Groman, & Seu, 2010). Bar-Haim, Lamy, Pergamin, Bakermans-Krazenburg, and van IJzendoorn (2006) undertook a meta-analysis of 172 studies and reported that threat-related attentional bias may influence performance on risk-taking tasks in which reward/loss and threat situations are apparent. In an undergraduate student sample, Maner et al. (2007) investigated the link between dispositional anxiety and the tendency to engage in risk-avoidant decision-making using the Balloon Analog Risk Task (BART; Lejuez et al., 2002). Individuals with high levels of social anxiety and trait anxiety displayed risk-avoidant decision-making, suggesting dispositional anxiety is associated with a pronounced bias toward making risk-avoidant choices. In a child sample, Humphreys et al. (2015) found that heightened separation anxiety was associated with making safer choices on the BART task.

In summary, although the SCARED was originally validated in children 8 years and older, studies have shown that it is also a valid measure in children as young as 6. To the authors' knowledge, no previous study has explicitly validated the SCARED in a predominantly early childhood sample. In such a sample, the SCARED would need to be validated against already validated questionnaire measures for younger children which

measure anxiety-related constructs (e.g., the CBCL and SDQ), interview-based diagnostic measures of anxiety, and observed behaviour (for example, on risk-related decision-making tasks).

Therefore, the aim of the current study was to consider the psychometric properties and validity of the SCARED: Parent version (SCARED-P) in an early childhood sample (predominantly children aged 4-7), and to understand its relationship to risk-taking behaviour. The specific hypotheses of the study were that:

- (1) The original theoretical five-factor model (Birmaher et al., 1997) of the SCARED-P would be supported.
- (2) The SCARED-P subscales would have satisfactory internal consistency.
- (3) The data would support the SCARED-P's construct validity in this age group in terms of (see Table 1 for the full range of specific predictions):

- a) Expected correlations with similar constructs in questionnaire measures already validated in early childhood (SDQ and CBCL), for example, the SCARED-P total positively correlating with the CBCL Anxious/Depressed subscale.
- b) Expected correlations with similar constructs in a diagnostic interview measure (Development and Well-being Assessment; DAWBA), for example, the SCARED-P Generalized Anxiety subscale positively correlating with the DAWBA GAD symptom count.
- c) Higher levels of observed anxiety-consistent behaviour (i.e. sensitivity to risk and avoidance behaviour) in a risk-based task (Balloon Emotional Learning Task) for children scoring higher on the SCARED-P. Specifically, that higher anxiety would be correlated with lower pumps (an index of risk avoidance) and higher points (an index of higher sensitivity to risk-related outcomes in the choices that they can make on the task).

Further exploratory analyses were also planned to consider a) convergent validity; whether there was a notable difference in the strength of correlations between internalising and externalising behaviour on the CBCL (as has been noted in older samples; e.g., Su et al., 2008); and b) whether certain SCARED-P items were redundant in younger children based on comparing responses of parents of 4–5-year-old children to responses of parents of children aged 6 years and older.

**Table 1**

*Hypothesised Correlations between SCARED-P and Questionnaire, Diagnostic Interview, and Risk-Taking Measures*

Measures		SCARED-P Total	SCARED-P Somatic/panic	SCARED-P Generalized anxiety	SCARED-P Separation anxiety	SCARED-P Social phobia	SCARED-P School phobia
<u>Questionnaires</u>	CBCL Total	X					
	CBCL Anxious/Depressed	X		X			
	CBCL Somatic Complaints		X				
	SDQ Total	X		X			
<u>Diagnostic interview</u>	SDQ Emotional Peer						X
	DAWBA Separation anxiety				X		
	DAWBA Social anxiety					X	
	DAWBA GAD			X			
<u>Observed behaviour in risk-based task</u>	BELT Pumps	X*					
	BELT Points	X					

*Note.* SCARED-P = Screen for Child Anxiety Related Emotional Disorders: Parent Version; SDQ = Strengths and Difficulties Questionnaire; CBCL = Child Behaviour Checklist; SDQ = Strengths and Difficulties Questionnaire; DAWBA = development and well-being assessment; BELT = Balloon Emotional Learning Task

\*hypothesised negative correlation

## Method

### Participants

Two hundred and thirty-three parent-child dyads participated in this study, having been referred by teachers to the Neurodevelopmental Assessment Unit (NDAU) at Cardiff University. Participating children were aged between 4 and 9 years of age (mean = 6.31 SD = 1.08; females = 34.3%). NDAU recruit children experiencing emotional and/or behavioural difficulties, and all participants included in this sample were seen at NDAU between October 2017 and March 2020 (all prior to the Covid-19 pandemic UK “lockdown”, at which point data collection was paused). The majority of the sample (N=222) were in the 4–7-year age bracket as per the NDAU referral criteria. However, as the NDAU also provides a feedback report containing educational psychology advice based on some of its normed measures, due to waiting list delays, a small number of children above 7 years old were also included in the sample on the basis of need (age 8, N=10; age 9; N=1). The sample were largely of British Caucasian ethnicity (81.5%). Ethical approval was granted for the project entitled: A Feasibility Study of a Neurodevelopmental Disorders Assessment Unit (EC.16.10.11.4592GRA5). A copy of the most recent approval (amendment) is contained in Appendix E.

### Measures

The SCARED: parent version (SCARED-P; Birmaher et al., 1997, see Appendix F) is a 41-item measure of child anxiety. The SCARED-P includes five factors: panic/somatic (13 items, e.g., “When my child feels frightened, it is hard for him/her to breathe”); generalized anxiety (9 items, e.g., “My child worries about things working out for him/her”); separation anxiety (8 items, e.g., “My child gets scared if he/she sleeps away from home”); social phobia (7 items, e.g., “My child feels nervous with people he/she doesn’t know well”), and school phobia (4 items, e.g., “My child gets stomach aches at school”). Severity of symptoms

are rated for the past 3 months using a 3-point scale (0 = not true or hardly ever true; 1 = sometimes true; 2 = true or often true). Scores range from 0 to 82 and higher scores reflect higher levels of anxiety.

The Strength and Difficulties Questionnaire (SDQ; Goodman, 2001) is a parental and teacher-based assessment tool which enables assessment of internalising and externalising difficulties within children. Parental assessments only were included in this study. The questionnaire is divided into five subscales: emotional problems; hyperactivity; conduct problems; peer problems; and prosocial scales. Due to the specific hypotheses and focus of this study, the total score, emotional problems subscale, and peer problems subscale were analysed.

The Child Behaviour Checklist (CBCL; Achenbach, 1991) is a 118-item parent measure for assessing child emotional and behavioural problems in children aged 4 – 18 years. Parents are asked to evaluate whether the behaviour is not true for their child (0), somewhat or sometimes true (1), or very true or often true (2), now or during the past six months. The CBCL produces a total score that ranges between 0 and 240; lower scores indicate poorer functioning. The total score and four subscales were utilised in this study. The first two subscales used were: CBCL anxious/depressed raw score (13 items e.g., ‘My child fears he/she might think or do something bad’), and CBCL somatic complaints raw score (11 items e.g., ‘My child feels dizzy or lightheaded’). The final two were the CBCL Internalising and Externalising subscales. These are larger subscales that incorporate several subscales to generate a score for Internalising and Externalising problems and were used to assess convergent validity.

The development and well-being assessment (DAWBA; Goodman, Ford, Richards, Gatward, & Meltzer, 2000) interview consists of questionnaires, interviews, and rating approaches designed to generate ICD-10 (World Health Organisation, 2019) and DSM-IV

diagnoses. When definite symptoms are identified by the structured questions, interviewers use open-ended questions and supplementary prompts to get parents to describe the problems in their own words. The information is brought together by a computer program that predicts likely diagnoses. Due to the specific hypotheses and focus of this study, the separation anxiety, social anxiety and generalized anxiety (GAD) symptom counts were included in the analyses.

A sub-section of the children (N=221) also completed the Balloon Emotional Learning Task (BELT; Humphreys, Lee, & Tottenham, 2013), which measures risk-related decision-making and thus theoretically taps into anxious (risk-averse) behaviour and non-anxious (risk-seeking) behaviour. The BELT is a computerised associative learning task in which participants press a button to “pump up” balloons and earn points for each balloon (i.e., more pumps earn more points). Too many pumps result in balloon explosions, which occur at an initially unknown number of pumps, resulting in the loss of all points for that trial. There are three different types of balloons, signified by different colours, counterbalanced across participants. Each balloon varies in the number of pumps required before the balloon bursts. Pink balloons explode at 19 pumps (“certain-long”), orange balloons explode at 7 pumps (“certain-short”), and blue balloons explode variably at 7 pumps, 13 pumps, or 19 pumps distributed equally across each third of the task (“uncertain”). There are 27 trials in total and balloon type is equally distributed. Points are awarded for the number of pumps a participant is able to administer without the balloon popping. A points meter is displayed on the screen. Participants are able to choose to stop inflating the balloon and to bank the points, or to risk losing the points if they continue to inflate the balloon to explosion. In this study, participants were not informed that the colour of balloon affected the tendency of the balloon to burst. For this study, the variables considered to be most theoretically related to anxiety were: (1) *Pumps*: number of pumps made (higher scores

theoretically indicate higher risk taking, and therefore those scoring more highly on the SCARED:P were expected to make less pumps); (2) *Points*: number of points earned across all trials (higher scores theoretically indicate more sensitivity to risk-related outcomes regarding each colour of balloon; hence those scoring more highly on the SCARED-P were expected to earn more points). An example screen shot of the BELT task can be found in Appendix G.

### **Procedure**

Parents provided written informed consent for data to be used for research purposes (Appendix H). Parent-child dyads visited the NDAU to complete an assessment over one or two testing sessions. Multiple parent and child measures were obtained and a sub-sample relating to the hypotheses of this study were retained for analysis. Nonclinical interviewers, who in this study were PhD and Clinical Psychology Doctoral students, administered the measures. Children completed computerised tasks, including the BELT task, whilst parents were interviewed (including the DAWBA) and completed a battery of questionnaire measures (including the CBCL, SDQ and SCARED-P). Following the testing, an educational psychology report containing advice based on some of the normed measures used in the study was sent to the child's school.

### **Sample Size and Data Analysis**

As per Mundfrom, Shaw, and Ke (2005), the variables-to-factors ratio was used to inform the necessary sample size to undertake factor analysis. In line with this, the current study's variable-to-factors ratio was calculated as 8.2 (41 variables / 5 factors). Mundfrom et al. (2005) advise that a variables-to-factor ratio of 7 or more requires a minimum necessary sample size of 180. Thus, the current study's 233 participant sample size was considered to be appropriate for analysis. To test the factor structure of the SCARED-P, both a one-factor model and a five-factor model were tested using a confirmatory factor analysis (CFA). For

the CFA, the structural equation modelling programme Mplus Version 8.6 was used (Muthén & Muthén, 2007). As the data did not justify the assumption of multivariate normality, the weighted least square mean and variance (WLSMV) adjusted estimator was employed (Brown, 2006). To evaluate the fit of the model we relied on the following indices:  $\chi^2$ , with  $\chi^2$  evaluated relative to degrees of freedom ( $\chi^2/df$ ), with  $< 2$  indicating good model fit (Mueller, 1999); Comparative Fit Index (CFI), with  $\rho > .90$  indicating an acceptable model fit (Bentler, 1990); Root Mean Square Error of Approximation (RMSEA), with  $< .08$  indicating an acceptable fit and  $< .06$  indicating a good fit (Browne & Cudeck, 1993); and Standardised Root Mean Square Residual (SRMR), with  $< .08$  representing an acceptable fit (Hu & Bentler, 1998).

IBM SPSS Statistics Version 25 was used for the remaining analyses. Cronbach's  $\alpha$  coefficients were calculated to evaluate the internal consistency of the SCARED-P total and subscales. Bivariate Pearson correlations were utilised to assess the relationships between the SCARED-P and the demographic variables (age, gender) and related measures (questionnaires and diagnostic interview). One-way analyses of variance (ANOVA) were used to understand the relationship between behaviour on a risk-related decision-making task and anxiety as measured by the SCARED-P. Chi square test of independence was utilised to understand differences between responses of parents with younger (4-5-year-olds) and older (6 years and older) children. This was to help understand whether any items were redundant for the youngest half of the sample in comparison to the older half of the sample. Statistically significant differences between parents' responses based on their child's age may have indicated some items were more or less relevant dependent on age, and warrant further exploration.

Where the data utilised did not meet the assumptions of normal distribution for the usage of parametric statistics, transformations were applied. Data was defined as non-normal

when the skewness statistic was two times greater than the standard error of skew. Three transformations were utilised where appropriate; logarithmic; square root; and reciprocal. The transformation which reduced the skewness statistic most significantly was retained for later analysis. This resulted in logarithmic transformations for: CBCL somatic complaints raw score subscale; square root transformations for: SCARED-P total, SCARED-P generalized anxiety, SCARED-P separation anxiety, SDQ emotional problems subscale, CBCL anxious depressed raw score subscale, DAWBA separation anxiety, DAWBA generalized anxiety, and reciprocal transformations for: SCARED-P panic/somatic, SCARED-P school, DAWBA separation anxiety, and DAWBA social anxiety. Following the data transformation, no outliers were identified within the data.

Of a potential 255 subjects, 22 were excluded as they had > 10% incomplete questionnaire data. For subjects who had < 10% missing questionnaire data, the missing data was handled using case mean imputation.

## Results

Descriptive statistics for the sample are reported in Table 2 for questionnaire, diagnostic interview, and risk-based behavioural task variables. Bivariate correlations between variables, age and gender are reported in Table 3.

**Table 2**

*Descriptive Statistics of Measures*

Measures	Mean (SD)	Range
SCARED-P	20.03 (14.4)	0-70
SDQ Total	18.4 (6.9)	2-34
SDQ Emotional (Parent)	3.63 (2.7)	0-10
SDQ Peer (Parent)	3.11 (2.3)	0-9
CBCL Total	58.7 (32.2)	0-147
CBCL Anxious / Depressive Raw	5.72 (4.5)	0-22
CBCL Internalising	14.68 (11.0)	0-51
CBCL Externalising	19.61 (12.2)	0-50
CBCL Anxious Raw	6.33 (5.6)	0-42
CBCL Somatic Complaints	2.92 (3.2)	0-14
DAWBA Separation Anxiety	1.29 (1.9)	0-8
DAWBA Social Anxiety	1.03 (1.8)	0-6
DAWBA GAD	0.69 (1.7)	0-6

BELT Pumps	156.1 (55.3)	27-292
BELT Points	105.3 (29.7)	24-166

*Note.* SCARED-P = Screen for Child Anxiety Related Emotional Disorders: Parent Version; SDQ = Strengths and Difficulties Questionnaire; CBCL = Child Behaviour Checklist; DAWBA = development and well-being assessment; BELT = Balloon Emotional Learning Task

## Relationship between SCARED-P, Age and Gender

**Table 3**

### *Bivariate Pearson Correlations of Anxiety Measures*

Measure	1	2	3	4	5	6	7	8
1. Age	1	.09	.13	.12	.20**	.05	.02	.10
2. Gender		1	.08	.04	.10	.01	.10	.02
3. SCARED-P Total			1	.82**	.87**	.82**	.71**	.68**
4. SCARED-P Panic				1	.65**	.60**	.40**	.53**
5. SCARED-P Generalized Anxiety					1	.61**	.54**	.50**
6. SCARED-P Separation Anxiety						1	.45**	.55**
7. SCARED-P Social							1	.37**
8. SCARED-P School								1

*Note.* \*\*  $p < .001$  SCARED-P = Screen for Child Anxiety Related Emotional Disorders - Parent version. Age recorded in months. Gender was coded as Males = 1, Females = 2.

Correlations indicated that older age was related to higher scores on the SCARED-P generalized anxiety subscale, but not the SCARED-P total score or any other subscale scores.

Correlations indicated that gender was not related to SCARED-P total or subscale scores.

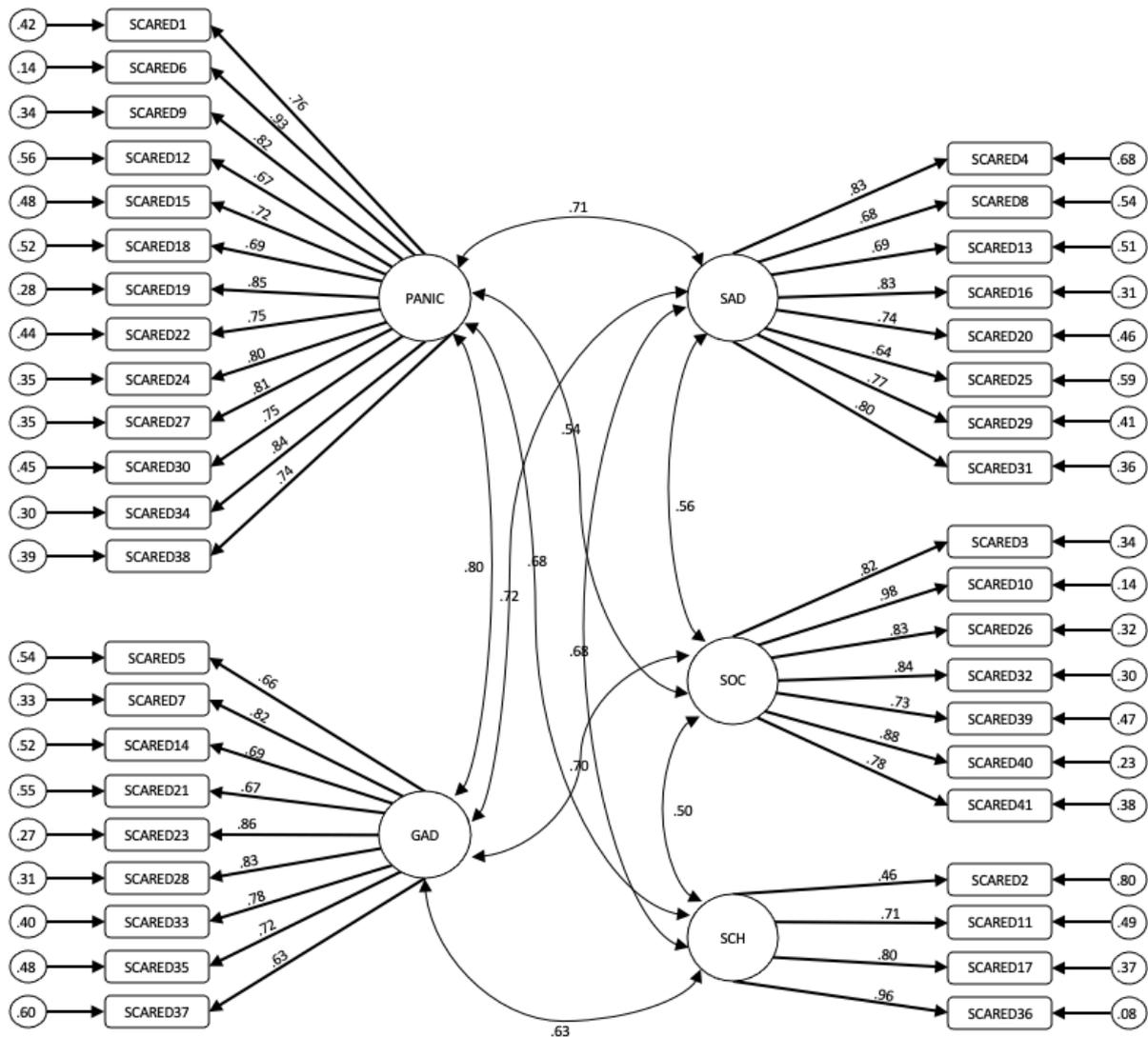
## Confirmatory Factor Analysis

### *Hypothesis 1*

Our first hypothesis was that the original theoretical five-factor model (Birmaher et al., 1997) of the SCARED-P would be supported by the data. The five-factor model reported by Birmaher (1997) had a better fit than the one-factor model (one factor model fit indices:  $\chi^2/df = 2.4$ ,  $p < .0001$ , CFI = .83, RMSEA = .078). For the five-factor model, the three most commonly reported model fit indices in the literature ( $\chi^2/df$ , CFI, RMSEA) indicated an adequate fit:  $\chi^2/df = 1.63$ ,  $p < .0001$ , CFI = .92, RMSEA = .052. However, the SRMR

model fit indices did not indicate a good fit (SRMR = .097). The parameter estimates and standard errors are shown in Figure 1. As shown by the parameter estimates, all but one reached  $> .60$ , indicating that the items loaded adequately on each factor. To further examine the SRMR model finding, it was found that specifying the model based on modification indices did not substantially improve the fit, nor did specifying the model to remove the items with the highest level of residual variance, as SRMR is a model fit index based on residual variance (items 2, 4 and 37).

**Figure 1**  
*The Five-Factor Model of the SCARED-P*



Note: Panic = SCARED-P Somatic/panic subscale; SAD = SCARED-P Separation anxiety subscale, SOC = SCARED-P Social phobia subscale; GAD=SCARED-P Generalized anxiety subscale; SCH = SCARED-P School phobia subscale. Smaller circles denote residual variance.

## **Validity**

### ***Internal consistency***

***Hypothesis 2*** Our second hypothesis was that the SCARED-P subscales would have satisfactory internal consistency. The internal consistency of the SCARED-P total score and subscales was measured by calculating Cronbach  $\alpha$  coefficients. The coefficient  $\alpha$  values were .94 for the total score, .87 for somatic/panic, .86 for generalized anxiety, .83 for separation anxiety, .89 for social phobia, and .68 for school phobia. For the male group, the coefficient  $\alpha$  values were .93 for the total score and ranged from .68 to .90 for the subscales. For the female group, the coefficient  $\alpha$  values were .95 for the total score and ranged from .69 to .91 for the subscales.

### **Further Exploratory Analyses**

#### ***Convergent validity***

The SCARED-P total correlated significantly and positively with the parents' CBCL internalising score ( $r = .54, p < .001$ ), where correlations above  $r = .50$  are suggested as an acceptable level of convergent validity (Carlson & Herdman, 2012). With regard to divergent validity, the SCARED-P total showed a significant, but poor, correlation with the externalising score ( $r = .20, p < .01$ ). This is in line with other convergent validity analyses of the SCARED (e.g., Su et al., 2008).

#### ***Age related item redundancy***

We then undertook further exploratory analyses to consider whether certain SCARED-P items were redundant based on comparing responses of parents of 4-5-year-old children to parents of children aged 6 years and older. Firstly, an average inter-item correlation was calculated to assess for item redundancy. Items had a mean inter-item correlation of 0.28, within the ideal 0.2-0.4 range (Piedmont, 2014). Next, to assess for redundant items by age, the sample was split into 4-5-year-olds (N=93) and over 6-year-olds

(N=140). A Chi square test of independence showed no significant difference (at the  $p < .01$  threshold of significance; lowered from  $p < .05$  to take account of likelihood of finding significant differences by chance given the high number of comparisons) between parents of 4-5-year-olds and parents of over 6-year-olds responses to 40 of the 41 SCARED-P items. Item 33 (“My child worries about what’s going to happen in the future”) was significantly different ( $p = .008$ ) between the two age groups (see Appendix I for results table). This item demonstrated a weak positive correlation to older age ( $r=.175$ ).

## **Construct validity**

### ***Hypothesis 3***

Our third hypothesis was that the data would support the SCARED-P’s construct validity in terms of expected correlations with similar constructs in questionnaire measures (SDQ and CBCL) and in a diagnostic interview measure (DAWBA). All 233 subjects were also evaluated using the CBCL and SDQ (parent version). Total scores and relevant subscales were used to establish construct validity both of the SCARED-P total, and the SCARED-P subscales with corresponding subscales from the CBCL and SDQ. Construct validity of the SCARED-P was also assessed by Pearson correlations with the DAWBA, a diagnostic interview. All predicted relationships (outlined in Table 1; and in bold in Table 4) were found to be positively and significantly correlated, as seen in Table 3. One hypothesised correlation was of weak strength; the remaining correlations were of medium strength. We only assigned significance to relationships that met the stricter significance level of  $p < .001$ . This was due to running a high number of correlations to fully explore the construct validity. Using this  $p$  value was preferred over alternative error control methods, such as Bonferroni correction, to minimise the likelihood of a Type II error occurring.

## **Table 4**

*Correlations between SCARED-P Total and Subscales with Theoretically Relevant Measures of Anxiety in this Child Sample*

Measure		SCARED-P Total	SCARED-P Somatic/Panic	SCARED-P General Anxiety	SCARED-P Separation Anxiety	SCARED-P Social Phobia	SCARED-P School Phobia	
<u>Questionnaires</u>	CBCL Total	<b>.42**</b>	.43**	.28**	.38**	.23**	.34**	
	CBCL Anxious/Depressed	<b>.67**</b>	.54**	<b>.61**</b>	.54**	.47**	.40**	
	CBCL Somatic Complaints	.36**	<b>.37**</b>	.24**	.31**	.17	.43**	
	SDQ Total	<b>.41**</b>	.39**	.30**	.37**	.19**	.39**	
	SDQ Emotional	<b>.72**</b>	.56**	<b>.61**</b>	.56**	.55**	.47**	
	SDQ Peer	.15	.22**	.10	.15	.02	<b>.26**</b>	
	<u>Diagnostic interview</u>	DAWBA Separation anxiety	.61**	.49**	.42**	<b>.67**</b>	.32**	.42**
		DAWBA Social anxiety	.40**	.27**	.34**	.24**	<b>.43**</b>	.22**
DAWBA GAD		.46**	.35**	<b>.42**</b>	.34**	.29**	.31**	

*Note.* \*\*p < .001 SCARED = Screen for Child Anxiety Related Emotional Disorders; CBCL = Child Behaviour Checklist; SDQ = Strengths and Difficulties Questionnaire; DAWBA = development and well-being assessment  
Hypothesised correlations are bolded.

The final part of our third hypothesis was that the data would support the SCARED-P's construct validity in this age group in terms of higher levels of observed anxiety-consistent behaviour (i.e., risk avoidance) in the BELT risk-based task for children scoring higher on the SCARED-P. In contrast to the hypothesis, BELT Pump scores were significantly and positively associated with SCARED-P total scores. However, in line with the hypothesis, BELT Point scores were significantly and positively associated with SCARED-P total scores, indicating children with higher anxiety made more successful risk decision-making.

**Table 5***Bivariate correlations between SCARED-P total and BELT outcomes*

	SCARED-P Total
BELT Pumps Total	.16*
BELT Points Total	.20**

*Note.* \* $p < .05$  \*\* $p < .01$  BELT = Balloon Emotional Learning Task

### **Discussion**

This study examined the psychometric properties and validity of the SCARED-P in an early childhood sample. As outlined, the field of childhood anxiety is limited by the lack of specific measures of anxiety suitable for early childhood (ages 4–7), as previously well-validated measures in this age group contain only anxiety-related subscales which do not assess for a wide range of anxiety disorder symptoms. Therefore, this study sought to add to the research base by examining the psychometric properties of the SCARED-P in an early childhood sample. The results will now be discussed as they relate to each of the hypotheses.

The first hypothesis was that the original theoretical five-factor model (Birmaher et al., 1997) of the SCARED, as found in older children, would be supported in this early childhood sample. Our analysis indicated mixed support for the five-factor model. Three model fit indices ( $\chi^2 /df$ , CFI and RMSEA) demonstrated acceptable model fit, and one model fit index (SRMR) demonstrated inadequate model fit. It is important to note that other psychometric studies concerning the SCARED have found mixed model fits for the original five-factor structure in older community child samples (e.g. Boyd, Ginsburg, Lambert, Cooley, & Campbell, 2003; Essau, Anastassiou-Hadjicharalambous, & Muñoz, 2013). The model fit index that suggested an inadequate model fit, SRMR, has not been consistently reported in other studies conducting CFA on the SCARED (Essau et al., 2013; Su et al., 2008). Unlike the other model fit indices, the SRMR is calculated based on residual (unexplained) variance. Indeed, there was a relatively high level of residual variance in some of the variables in the model, meaning that there may be further relationships existing within

the data that are not explained by the original five-factor model. Relatedly, an exploratory factor analysis (EFA) revealed evidence within the data of cross-loading, with items loading onto multiple factors, which could explain the inadequate SRMR finding. The EFA did not identify a clear pattern of cross loadings. As the original Birmaher et al. (1997) paper did not report the factor loadings of items across all factors it was not possible to compare whether this sample's pattern of cross loadings was in line with, or different, to the original findings. For this reason, the cross loadings are not presented.

It is noted that the sample were made up of all school-referred children (akin to a 'clinical sample' rather than a 'community' sample) which might explain larger than expected cross-loading of items due to increased comorbidity in the sample. Several other SCARED-P validation samples have utilised community samples, which may explain the differing results of this study (Hale et al., 2005; Isolan et al., 2011; Su et al., 2008). Despite the overall model fit findings, the CFA did demonstrate that items loaded adequately onto each factor. Further, consistent with previous research, there were correlations both amongst factors, and between the SCARED-P total and all factors. Taken together, the findings indicate mixed support for the five-factor structure of the SCARED-P in an early childhood sample, and suggest more research is required in early childhood community samples.

In line with the second hypothesis, the internal consistency of the SCARED-P total score was found to be high ( $\alpha = .94$ ), with subscales indicating good levels of internal consistency. The coefficient  $\alpha$  for the SCARED-P total score was similar for males and females. A high coefficient  $\alpha$  can be indicative of high item redundancy, however the average inter-item correlation fell within the advised inter-item correlation range of .2 to .4 (Piedmont, 2014), suggesting item redundancy was not an issue. Within the SCARED-P subscales, the lowest internal consistency was for the school subscale ( $\alpha = .68$ ). This is consistent with other studies in older children (Essau et al., 2013; Isolan et al., 2011; Su et al.,

2008) and may be due in part to the small number of items in this subscale (N= 4). The overall picture is that the SCARED-P and its subscales demonstrated sufficient reliability in this predominantly early childhood sample.

The third hypothesis was that the data would support the SCARED-P's construct validity across related questionnaire measures, a diagnostic interview, and a risk-based task. The hypothesised relationships between the CBCL, SDQ and SCARED-P were found to be significant in the expected directions. The related subscales from the DAWBA diagnostic interview correlated with the corresponding subscales of the SCARED-P (see Table 1 for the specific predicted relationships that were supported in the data). Taken together, these results demonstrate SCARED-P's satisfactory construct validity with related questionnaire and interview measures. In line with Monga et al. (2000), which utilised the CBCL as a comparison measure, the SCARED-P also showed good convergent and divergent validity. Specifically, the SCARED-P total score correlated significantly and positively with the parents' CBCL internalising score, indicating acceptable convergent validity (Carlson & Herdman, 2012). It should be noted that the CBCL and SDQ were chosen for the construct validity analysis as they share theoretical similarities (i.e. identify similar symptomologies relating to anxiety). This does mean that some items on the CBCL and SDQ overlap with the SCARED-P, for example all three measures ask about headaches. The SDQ contains one item worded similarly to the SCARED-P and the CBCL contains four, therefore the item overlap was evaluated as being minimal.

The final part of the third hypothesis was that the SCARED-P would show good construct validity in relation to actual observed anxiety-consistent behaviour in a risk-based task. Utilising a real-world task that measures a behaviour linked to anxiety adds to the construct validity analyses, as it enables data directly from this younger sample to be included in the study and adds an additional construct to compare to. We hypothesised that

higher anxiety would be correlated with higher levels of observed anxiety-consistent behaviour on the BELT (i.e. lower pumps, an index of risk avoidance, and higher points, an index of higher sensitivity to risk-related outcomes). Against expectations, high anxiety was correlated with higher overall pumps. This is not in line with previous research that has found anxious individuals exhibit less pumps on a similar balloon risk task (the BART; Maner et al., 2007). One explanation for this unexpected finding may lie in the risk-taking task itself. The BELT provides the opportunity for learning within the task (through having three coloured balloons to choose from, two of which explode at predictable points which can be learnt). Having balloons with different outcomes is different to its predecessor, the BART (Lejuez et al., 2002), as the BART has one balloon which explodes after *random* amounts of pumps. Hence, those with higher anxiety play safe in the BART (as found by Maner et al., 2007), but in the BELT perhaps learn the contingencies of the task better than non-anxious children. This could be indicative of anxious children learning about reward contingencies better than their lower anxiety peers. By learning the intricacies of the task better than non-anxious peers, this may have translated into more pumps of the balloons (i.e. upon learning, knowing that they were safe to pump the balloons further) resulting in more points on the task. While previous findings have found a link between anxiety and learning on decision making in gambling tasks (Robinson, Vytal, Cornwell, & Grillon, 2013) including in children as young as 3 (Humphreys et al. (2016), findings have typically demonstrated that a high sensitivity to feedback in young children results in less risk taking (Humphreys et al., 2016). Further work is needed to establish whether anxiety can enhance learning in children in certain contexts.

Further analyses not directly relating to the hypotheses were also conducted. Firstly, bivariate correlations showed no relationship between gender and SCARED-P total or subscales. This is not in line with other studies, which have typically found females to exhibit

higher anxiety on the total score and/or particular subscales (Birmaher et al., 1997; Hale et al., 2005; Hale et al., 2011). These gender differences have typically been reported in community samples; however, as our sample was more akin to a clinical sample, one may expect all participants to exhibit some level of anxiety. Further, the DSM-V also notes that gender differences in anxiety increase with age (APA, 2013). In terms of age, older age was related to higher scores on the SCARED-P generalized anxiety subscale. This supports previous findings of generalized anxiety being higher in older age groups than younger cohorts (Hale et al. 2005). Secondly, there was little evidence to suggest that a significant number of items were not relevant for the younger age group of 4–5-year-olds. A chi-square test of independence showed that there was no significant association between age and SCARED-P item scores for 40 of the 41 items. Only one item was answered in a significantly different manner across the two age groups. This is important as it suggests the SCARED-P was interpreted and answered in a similar way irrespective of whether the child was towards the younger (4-5-year-olds) or older (6-years+) end of the sample. This adds weight to the SCARED-P's utility as a measure for anxiety in early childhood.

### **Strengths and Limitations**

As outlined, research in the field of early childhood anxiety is important due to its clinical and research implications. A strength of this study is that it contributes to the early childhood anxiety research base which is important given the evidence suggesting anxiety disorders in childhood are strong predictors of later adolescent or adult anxiety disorders, especially when childhood anxiety has been poorly managed (Isolan et al., 2011; Benjamin et al., 2013). Validation of a psychometric measure can aid in the identification of children in need of early intervention work. The sample utilised in this study is particularly relevant when considering children who might be most in need of such a measure, as all children were referred by their school for an identified emotional or behavioural difficulty, therefore

making this a clinically relevant sample. Finally, we used a variety of methods to validate the SCARED-P, including related questionnaire measures, a diagnostic interview, and a task linked to observable anxiety-related behaviour. This increases the robustness of the validation.

There are a number of limitations in relation to the present study which must be taken into consideration when interpreting these results. The first limitations relate to the sample. Previous studies have utilised much larger samples (Essau et al., 2013; Isolan et al., 2011; Su et al., 2008), and although the sample size was adequately powered for CFA, the SCARED may benefit from a larger sample to better understand the model fit within this age group. Secondly, it could be argued that as this sample uses a younger age group than the original paper (Birmaher et al., 1997), an exploratory factor analysis could have been conducted instead of a CFA as an alternative factor structure may have been more appropriate for the symptomology of a younger age group. However, a CFA was considered appropriate as no clear theoretical reason was identified to suggest there would be a different factor structure in younger children. For example, the SCARED-P has been utilised for 6-year-olds with no issues reported (Weitkamp et al., 2010). Considerably more boys than girls participated in this study, which may have added a possible gender bias. This sample included only children referred to a research centre for identified emotional and behavioural difficulties and did not have a community-based control group. The use of a clinical sample limits the generalisability to community samples.

Finally, there are some limitations in regard to the data analysis. It was not possible to conduct test-retest reliability statistics, as this sample were seen at just one time point prior to the Covid-19 pandemic (and hence post-pandemic assessments would have been unsuitable for test-retest reliability due the occurrence of a significant societal event having a likely impact upon children's anxiety levels). Future studies would benefit from assessing the

test-retest reliability to further validate the measure in early childhood samples. The correlation analyses used a set  $p$  value of 0.01. Alternative error control methods could have included using a Bonferroni post-hoc corrections to adjust the  $p$  value to account for multiple comparisons.

### **Clinical implications**

The present study provides some evidence that the SCARED-P is a useful measure of anxiety in younger children. Firstly, the reliability of the scale was good, and analyses indicated the measure was answered in a consistent manner by parents of older (6 years and older) and younger (4-5-year-old) children. Secondly, although the CFA demonstrated mixed evidence for an adequate fit with the original five-factor model proposed by Birmaher et al. (1997), the SCARED-P total score and subscales within the five-factor model still showed good construct validity with other related questionnaire measures and a diagnostic interview. All items also loaded onto the expected factors to a satisfactory level. Given the paucity of anxiety measures for younger children, the SCARED-P may be valuable when considering interventions for early childhood anxiety. The evaluation of interventions for early childhood anxiety is a relatively recent area of investigation, and research indicates that interventions for younger children may look different to the recommended course of treatment for older children (Comer, Hong, Poznanski, Silva, & Wilson 2019). Parents tend to play a more integral role in interventions for early childhood anxiety (Anticich, Barrett, Gillies, & Silverman, 2012). Therefore, a valid measure for early childhood anxiety that utilises parent report fits with the overall approach towards early childhood anxiety, with parents seen as both key informants and key agents of change in their young child's anxiety. Reviews have pointed towards the school environment as being the key setting for identification for young children experiencing anxiety (Anticich et al., 2012; Mifsud & Rapee, 2005). In promoting the mental health of children, teachers are in a position to provide early identification of

potential mental health difficulties through the use of relevant screening measures. Given some of the challenges in identifying internalising difficulties, rather than more observable externalising problems, the SCARED-P could find utility in schools to aid in the screening and assessment of children whose difficulties may otherwise go unnoticed. This is particularly useful as the use of school-based mental health interventions for children and parents is growing (Anticich et al., 2012).

As the SCARED-P shows good correlations with the child version of the SCARED (Birmaher et al. 1997), its utility as a consistent measure that tracks anxiety over time, from parent-informed at a younger age to child-informed at an older age, provides continuity in assessing a child's symptomology. This is important as the wider research base has indicated a need for further longitudinal research to be conducted to better understand common trajectories for childhood mental health problems (Weems, 2008). As early childhood anxiety has been linked to later childhood anxiety, the use of SCARED-P in early childhood enables greater opportunities for early intervention. Screening through the SCARED-P, along with further assessment of common risk factors associated with the development of child anxiety, could aid in identifying children who would benefit from preventative or early intervention strategies.

## **Conclusion**

The overall findings in the present study demonstrate that the SCARED-P appears to be a reliable and consistent measure for early childhood anxiety. Its factor structure would benefit from further validation in a wider early childhood community sample. As the SCARED-P is easy to administer, cost-effective, and, as it is well validated in older childhood, it serves as a consistent measure from tracking anxiety over time. Given the

impact early childhood anxiety can have both on day-to-day functioning and longer-term outcomes, the SCARED-P may be a valuable tool for screening younger children for further assessment and intervention.

### **Declaration**

The present study was prepared as part of the lead authors Doctorate of Clinical Psychology (DClinPsy) thesis. The author reports no conflicts of interest to declare.

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## Appendices

### Appendix A. Author Guidance for Submitting Manuscripts to Journal of Contextual Behavioral Science

#### GUIDE FOR AUTHORS

##### *Types of article*

All manuscripts must clearly and explicitly be of relevance to CBS. You may find the JCBS article "Contextual Behavioral Science: creating a science more adequate to the challenge of the human condition" helpful in assessing whether your manuscript is likely to be of interest to readers of this journal.

Articles should fall into one of six categories: 1. Empirical research (up to 6000 words) 2. Brief empirical reports (up to 3000 words) 3. Review articles (up to 10,000 words) 4. Conceptual articles (up to 6000 words) 5. Practical innovations (up to 6000 words) 6. Commentaries (up to 3000 words)

Word limits exclude references, tables and figures but include the abstract

1. Empirical research. JCBS welcomes manuscripts across a breadth of domains from basic behavioral science to clinical trials. Potential methodologies include but are not limited to randomized controlled trials, single case experimental designs, cross-sectional and prospective cohort studies, mixed- methods designs, and laboratory-based studies. For randomized clinical trials, JCBS requires that submissions follow CONSORT guidelines (<http://www.consort-statement.org>). Papers reporting null findings are also welcome if their methodology is sound and their power sufficient.

2. Brief empirical reports. Manuscripts in this section may report preliminary, provocative or replicated results. Empirically sound methodology and adequate power remain important considerations.

3. Review articles. Manuscripts reviewing a wide range of topics are encouraged as long as their content is directly relevant to CBS. Systematic reviews and meta-analyses are particularly welcome. For meta-analyses and systematic reviews, JCBS requires submissions follow PRISMA guidelines (<http://www.prisma-statement.org/>).

4. Conceptual articles. Manuscripts in this section should address conceptual or theoretical issues relevant to CBS. This may include papers that discuss relevant philosophical assumptions and traditions, or conceptual papers which explore aspects of or inconsistencies in contextual behavioral theory and science.

5. Practical innovations. Manuscripts in this section share innovative and practically useful descriptions of applications of CBS to a given problem area based on real world implementation, with preliminary data supporting the innovation directly (preferred) or indirectly through relevant conceptual and empirical references. Submissions are evaluated based on the degree to which they 1) provide information that is directly useful to applied work, 2) provide innovative information (e.g., a novel protocol, population, issue), 3) are based on real world implementation/practice, and 4) are based on preliminary data reported in the manuscript, or a strong link to existing conceptual/empirical literature. Submissions that report empirical data should still primarily emphasize detailed descriptions of the intervention/training protocol and/or of

the applied relevance of the findings (e.g., clarifying and problem solving how to address an applied challenge identified in the study).

6. Commentaries. In some circumstances, we will consider commentaries on other manuscripts that have been recently published in JCBS. Commentaries will be subjected to peer-review and will be held to the same standards of providing a notable contribution to our field to warrant publication. Authors will typically be informed when a commentary has been submitted on a manuscript they have published and will be given the opportunity to respond in print if the commentary is published. We encourage authors to contact the editor-in-chief prior to preparing a commentary to determine potential suitability for JCBS.

The Journal welcomes suggestions for Special Issues. Proposals for a themed Special Issue should be sent to the Editor-in-Chief, Michael Levin at Mike.Levin@usu.edu, and should include suggested Guest Editors, a proposed call-for-papers, 6-10 example authors and topics that would fit the special issue, a proposed timeline for submission, peer-reviewing, revision and publication. All manuscripts in a special issue will be subject to the normal process of peer-review.

### **Contact details for submission**

To contact the Editor-in-Chief prior to your submission with any questions, please email Mike.Levin@usu.edu

### **Submission checklist**

You can use this list to carry out a final check of your submission before you send it to the journal for review.

#### **Ensure that the following items are present:**

One author has been designated as the corresponding author with contact details: • E-mail address

- Full postal address

All necessary files have been uploaded:

*Title Page (with author details):*

- Include title, names, affiliations, contact information, acknowledgments, and funding information

*Manuscript (without author details):*

- Include keywords
- All identifying author information removed
- Include a statement on ethical approval and informed consent for research involving human subjects
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

*Highlights*

*Conflict of Interest**Response to Reviewers (without author details; for resubmissions)*

Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
- Manuscripts should be prepared in APA style (7th edition)
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

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**Study and Analysis Registration**

Authors are required to state if the study is pre-registered, and, if so, where to access it (such as trial registration number). A study is considered pre-registered if it is registered in a repository prior to when the study began. If a study is pre-registered, authors should note this information in the cover letter with the unmasked information about where to access it. When available, pre-registration information should also be listed in the methods section or abstract, although masked for peer-review until final acceptance of the submission. We recommend using text such as "The study was pre- registered at \_\_\_\_\_ (insert name of repository, trial identification number and/or link to study registration)."

**Appeal Process**

If your paper is rejected and you believe the peer review process was not fair, an appeal may be sent to the Editor via email at Mike.Levin@usu.edu.

***Ethics in publishing***

Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

### ***Studies in humans and animals***

If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed. The sex of animals must be indicated, and where appropriate, the influence (or association) of sex on the results of the study.

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Studies on patients or volunteers require ethics committee approval and informed consent, which should be documented in the paper. Appropriate consents, permissions and releases must be obtained where an author wishes to include case details or other personal information or images of patients and any other individuals in an Elsevier publication. Written consents must be retained by the author but copies should not be provided to the journal. Only if specifically requested by the journal in exceptional circumstances (for example if a legal issue arises) the author must provide copies of the consents or evidence that such consents have been obtained. For more information, please review the Elsevier Policy on the Use of Images or Personal Information of Patients or other Individuals. Unless you have written permission from the patient (or, where applicable, the next of kin), the personal details of any patient included in any part of the article and in any supplementary materials (including all illustrations and videos) must be removed before submission.

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Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent publication' for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

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Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'they' instead of 'he' or 'he/she', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

### ***Authorship***

All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

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Authors are expected to consider carefully the list and order of authors **before** submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only **before** the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the **corresponding author**: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed.

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We recommend reporting of randomized controlled trials follow CONSORT guidelines. Authors must include a flow diagram that illustrates the progress of patients through the trial, including recruitment, enrollment, randomization, and withdrawal and completion. The CONSORT checklist and template flow diagram are available online.

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If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.;

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### ***Keywords***

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

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- Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Provide captions to illustrations separately.
- Size the illustrations close to the desired dimensions of the published version.
- Submit each illustration as a separate file.
- Ensure that color images are accessible to all, including those with impaired color vision.

A detailed guide on electronic artwork is available.

### **You are urged to visit this site; some excerpts from the detailed information are given here.** *Formats*

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.

Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS (or PDF): Vector drawings, embed all used fonts.

TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.

TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi. TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

#### **Please do not:**

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
- Supply files that are too low in resolution;
- Submit graphics that are disproportionately large for the content.

### *Color artwork*

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF) or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) in addition to color reproduction in print. Further information on the preparation of electronic artwork.

### *Figure captions*

Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

### **Tables**

Please submit tables as editable text and not as images. In accordance with APA style, tables should be placed on separate page(s) at the end of the manuscript. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

### **References**

#### *Citation in text*

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

#### *Web references*

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

#### *Data references*

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

#### *References in a special issue*

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

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Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

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### *Reference style*

*Text:* Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Seventh Edition, ISBN 978-1-4338-3215-4, copies of which may be ordered online.

*List:* references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

#### *Examples:*

Reference to a journal publication:

Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2010). The art of writing a scientific article. *Journal of Scientific Communications*, 163, 51–59.

<https://doi.org/10.1016/j.sc.2010.00372>. Reference to a journal publication with an article number:

Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2018). The art of writing a scientific article. *Heliyon*, 19, Article e00205. <https://doi.org/10.1016/j.heliyon.2018.e00205>.

Reference to a book:

Strunk, W., Jr., & White, E. B. (2000). *The elements of style* (4th ed.). Longman (Chapter 4). Reference to a chapter in an edited book:

Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). E-Publishing Inc. Reference to a website:

Powertech Systems. (2015). *Lithium-ion vs lead-acid cost analysis*. Retrieved from <http://www.powertechsystems.eu/home/tech-corner/lithium-ion-vs-lead-acid-cost-analysis/>. Accessed January 6, 2016

Reference to a dataset:

[dataset] Oguro, M., Imahiro, S., Saito, S., & Nakashizuka, T. (2015). *Mortality data for Japanese oak wilt disease and surrounding forest compositions*. Mendeley Data, v1. <https://doi.org/10.17632/xwj98nb39r.1>.

Reference to a conference paper or poster presentation:

Engle, E.K., Cash, T.F., & Jarry, J.L. (2009, November). *The Body Image Behaviours Inventory-3: Development and validation of the Body Image Compulsive Actions and Body Image Avoidance Scales*. Poster session presentation at the meeting of the

Association for Behavioural and Cognitive Therapies, New York, NY.  
Reference to software:

Coon, E., Berndt, M., Jan, A., Svyatsky, D., Atchley, A., Kikinzon, E., Harp, D., Manzini, G., Shelef, E., Lipnikov, K., Garimella, R., Xu, C., Moulton, D., Karra, S., Painter, S., Jafarov, E., & Molins, S. (2020, March 25). *Advanced Terrestrial Simulator (ATS) v0.88 (Version 0.88)*. Zenodo. [https:// doi.org/10.5281/zenodo.3727209](https://doi.org/10.5281/zenodo.3727209).

### Reference Style

*Text:* Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Seventh Edition, ISBN 978-1-4338-3215-4, copies of which may be ordered online or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK. *List:* references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

### Examples:

Reference to a journal publication:

Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2010). The art of writing a scientific article. *Journal of Scientific Communications*, 163, 51–59.

<https://doi.org/10.1016/j.Sc.2010.00372>. Reference to a journal publication with an article number:

Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2018). The art of writing a scientific article. *Heliyon*, 19, e00205. <https://doi.org/10.1016/j.heliyon.2018.e00205>.

Reference to a book:

Strunk, W., Jr., & White, E. B. (2000). *The elements of style*. (4th ed.). New York: Longman, (Chapter 4).

Reference to a chapter in an edited book:

Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). New York: E-Publishing Inc.

Reference to a website:

Cancer Research UK. Cancer statistics reports for the UK. (2003).

<http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/> Accessed 13 March 2003.

Reference to a dataset:

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). *Mortality data for Japanese oak wilt disease and surrounding forest compositions*. Mendeley Data, v1.

<https://doi.org/10.17632/xwj98nb39r.1>.

Reference to a conference paper or poster presentation:

Engle, E.K., Cash, T.F., & Jarry, J.L. (2009, November). The Body Image Behaviours Inventory-3: Development and validation of the Body Image Compulsive Actions and Body Image Avoidance Scales. Poster session presentation at the meeting of the Association for Behavioural and Cognitive Therapies, New York, NY.

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MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

## **AFTER ACCEPTANCE**

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## Appendix B. Systematic Review Inclusion and Exclusion Criteria Systematic Review

	<b>Include</b>	<b>Exclude</b>
<b>Participants</b>	Studies of parents of primary caregivers	Studies reporting outcomes of children or adolescents only
<b>Study design</b>	Longitudinal studies  Cross sectional study  Cohort studies  Randomised controlled trial  Grey literature	Meta-analysis  Systematic reviews  Case-control study  Ideas, editorials or opinions  Animal Studies
<b>Intervention</b>	Intervention studies that include correlations between psychological flexibility and parent stress	Case reports or studies Intervention studies that do not include correlations between psychological flexibility and parent stress
<b>Outcomes</b>	Studies which assess the relationship between psychological flexibility and parental stress	Studies which do not assess the relationship between psychological flexibility and parental stress
<b>Measures</b>	Studies that use any measure validated of psychological flexibility  Studies that use at least one validated measure of parental stress or parental wellbeing	Studies where outcomes are just for children Studies which have no validated psychological flexibility measures  Studies which have no validated parental stress measures

## Appendix C. Systematic Review QATSDD Reporting Criteria

Item	Criteria	0 = Not at all	1 = Very slightly	2 = Moderately	3 = Complete
1	Explicit theoretical framework	No mention at all.	Reference to broad theoretical basis.	Reference to a specific theoretical basis.	Explicit statement of theoretical framework and/or constructs applied to the research.
2	Statement of aims/objectives in main body of report	No mention at all.	General reference to aim/objective at some point in the report including abstract.	Reference to broad aims/objectives in main body of report.	Explicit statement of aims/objectives in main body of report.
3	Clear description of research setting	No mention at all.	General description of research area and background, e.g. 'in primary care'.	General description of research problem in the target population, e.g. 'among GPs in primary care'.	Specific description of the research problem and target population in the context of the study, e.g. nurses and doctors from GP practices in the east midlands.
4	Evidence of sample size considered in terms of analysis	No mention at all.	Basic explanation for choice of sample size. Evidence that size of the sample has been considered in study design.	Evidence of consideration of sample size in terms of saturation/information redundancy or to fit <b>generic</b> analytical requirements.	Explicit statement of data being gathered until information redundancy/saturation was reached or to fit <b>exact</b> calculations for analytical requirements.
5	Representative sample of target group of a reasonable size	No statement of target group.	Sample is limited but represents some of the target group or representative but very small.	Sample is somewhat diverse but not entirely representative, e.g. inclusive of all age groups, experience but only one workplace. Requires discussion of target population to determine what sample is required to be representative.	Sample includes individuals to represent a cross section of the target population, considering factors such as experience, age and workplace.
6	Description of procedure for data collection	No mention at all.	Very basic and brief outline of data collection procedure, e.g. 'using a questionnaire distributed to staff'.	States each stage of data collection procedure but with limited detail, or states some stages in details but omits others.	Detailed description of each stage of the data collection procedure, including when, where and how data were gathered.
7	Rationale for choice of data collection tool(s)	No mention at all.	Very limited explanation for choice of	Basic explanation of rationale for choice of data collection tool(s),	Detailed explanation of rationale for choice of data collection tool(s), e.g. relevance

			data collection tool(s).	e.g. based on use in a prior similar study.	to the study aims and assessments of tool quality either statistically, e.g. for reliability & validity, or relevant qualitative assessment.
8	Detailed recruitment data	No mention at all.	Minimal recruitment data, e.g. no. of questionnaire sent and no. returned.	Some recruitment information but not complete account of the recruitment process, e.g. recruitment figures but no information on strategy used.	Complete data regarding no. approached, no. recruited, attrition data where relevant, method of recruitment.
9	Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	No mention at all.	Reliability and validity of measurement tool(s) discussed, but not statistically assessed.	Some attempt to assess reliability and validity of measurement tool(s) but insufficient, e.g. attempt to establish test-retest reliability is unsuccessful but no action is taken.	Suitable and thorough statistical assessment of reliability and validity of measurement tool(s) with reference to the quality of evidence as a result of the measures used.
10	Fit between stated research question and method of data collection (Quantitative)	No research question stated.	Method of data collection can only address some aspects of the research question.	Method of data collection can address the research question but there is a more suitable alternative that could have been used or used in addition.	Method of data collection selected is the most suitable approach to attempt answer the research question
11	Fit between stated research question and format and content of data collection tool e.g. interview schedule (Qualitative – Excluded from table)	No research question stated.	Structure and/or content only suitable to address the research question in some aspects or superficially.	Structure & content allows for data to be gathered broadly addressing the stated research question(s) but could benefit from greater detail.	Structure & content allows for detailed data to be gathered around all relevant issues required to address the stated research question(s).
12	Fit between research question and method of analysis	No mention at all.	Method of analysis can only address the research question basically or broadly.	Method of analysis can address the research question but there is a more suitable alternative that could have been used or used in addition to offer greater detail.	Method of analysis selected is the most suitable approach to attempt answer the research question in detail, e.g. for qualitative IPA preferable for experiences vs. content analysis to elicit frequency of occurrence of events, etc.
13	Good justification for analytical method selected	No mention at all.	Basic explanation for choice of analytical method	Fairly detailed explanation of choice of analytical method.	Detailed explanation for choice of analytical method based on nature of research question(s).

14	Assessment of reliability of analytical process (Qualitative only – Excluded from table)	No mention at all.	More than one researcher involved in the analytical process but no further reliability assessment.	Limited attempt to assess reliability, e.g. reliance on one method.	Use of a range of methods to assess reliability, e.g. triangulation, multiple researchers, varying research backgrounds.
15	Evidence of user involvement in design	No mention at all.	Use of pilot study but no involvement in planning stages of study design.	Pilot study with feedback from users informing changes to the design.	Explicit consultation with steering group or statement or formal consultation with users in planning of study design.
16	Strengths and limitations critically discussed	No mention at all.	Very limited mention of strengths and limitations with omissions of many key issues.	Discussion of some of the key strengths and weaknesses of the study but not complete.	Discussion of strengths and limitations of all aspects of study including design, measures, procedure, sample & analysis.

## **Appendix D. Author Guidance for Submitting Manuscripts to Assessment (Sage Journals)**

### **Manuscript Submission Guidelines:**

The editor invites high quality manuscripts covering a broad range of topics and techniques in the area of psychological assessment. These may include empirical studies of assessment of personality, psychopathology, cognitive functions or behavior, articles dealing with general methodological or psychometric topics relevant to assessment, or comprehensive literature reviews in any of these areas. This journal encourages submissions evaluating a) new assessment methodologies and techniques for both researchers and practitioners, b) how assessment methods and research informs understanding of major issues in clinical psychology such as the structure, classification, and mechanisms of psychopathology, and c) multi-method assessment research and the integration of assessment methods in research and practice. Additionally, the journal encourages submissions introducing useful, novel, and non-redundant instruments or demonstrating how existing instruments have applicability in new research or applied contexts. All submissions should provide strong rationales for their efforts and articulate important implications for assessment science and/or practice

Research participants may represent both clinical and nonclinical populations. Manuscripts should include how sample size has been determined, all data exclusions, all manipulations, and all measures in the study.

In general, regular articles should not exceed 30 pages of text, excluding Title Page, Abstract, Tables, Figures, Footnotes and Reference list.

Authors submitting manuscripts to the journal should not simultaneously submit them to another journal, nor should manuscripts have been published elsewhere, including the World Wide Web, in substantially similar form or with substantially similar content.

**This journal is a member of the Committee on Publication Ethics (COPE)**

### **Manuscript Submission:**

Manuscripts must be submitted in Microsoft Word or Rich Text Format (rtf) electronically at <https://mc.manuscriptcentral.com/asmnt>. Figures may be submitted using any of the formats listed below. If requesting a masked blind review, please ensure that both a manuscript file with no identifying author information and a separate title page with author details are included in your submission. Questions should be directed to the ASSESSMENT Editorial Office by email: [assessment.editorial@gmail.com](mailto:assessment.editorial@gmail.com).

If you or your funder wish your article to be freely available online to nonsubscribers immediately upon publication (gold open access), you can opt for it to be included in SAGE Choice, subject to the payment of a publication fee. The manuscript submission and peer review procedure is unchanged. On acceptance of your article, you will be asked to let SAGE know directly if you are choosing SAGE Choice. To check journal eligibility and the publication fee, please visit SAGE Choice. For more information on open access options and compliance at SAGE, including self/author archiving deposits (green open access) visit SAGE Publishing Policies on our Journal Author Gateway.

### **Preparation of Manuscripts:**

Authors should carefully prepare their manuscripts in accordance with the following instructions.

Authors should use the [Publication Manual of the American Psychological Association](#) as a guide for preparing manuscripts for submission. All manuscript pages, including reference lists and tables, must be typed double-spaced.

The first page of the paper (the title page) should contain the article title, the names and affiliations of all authors, authors' notes or acknowledgments, and the names and complete mailing addresses of the corresponding author. If requesting a masked blind review, the first page should contain only the article title and the title page should be uploaded as a separate document.

The second page should contain an abstract of no more than 150 words and five to seven keywords that will be published following the abstract.

The following sections should be prepared as indicated:

Tables. Each table should be fully titled, double-spaced on a separate page, and placed at the end of the manuscript. Tables should be numbered consecutively with Arabic numerals. Footnotes to tables should be identified with superscript lowercase letters and placed at the bottom of the table. All tables should be referred to in the text.

Figures. Electronic copies of figures can be submitted in one of the following file formats: TIFF, EPS, JPEG, or PDF. All figures should be referred to in text. Each figure should appear on a separate page at the end of the manuscript but before the tables, and all titles should appear on a single, separate page.

Endnotes. Notes should appear on a separate page before the References section. Notes should be numbered consecutively and each endnote should be referred to in text with a corresponding superscript number.

References. Text citations and references should follow the style of the Publication Manual of the American Psychological Association.

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If you do not already have an ORCID iD please follow this [link](#) to create one or visit our [ORCID homepage](#) to learn more.

## Appendix E. Ethical Approval of NDAU Project

From: psychethics <psychethics@cardiff.ac.uk>  
 Subject: Ethics Feedback - EC.16.10.11.4592GRA5  
 Date: 5 July 2018 at 10:34:22 BST  
 To: Stephanie Van Goozen <VangoozenS@cardiff.ac.uk>

Dear Steph,

The Ethics Committee has considered the amendment to your Staff project proposal: A Feasibility Study of a Neurodevelopmental Disorders Assessment Unit (EC.16.10.11.4592GRA5).

The amendment has been approved on the condition that a comment is added to the information, stating that if a child shows distress the monitor can be removed immediately.

Please note that if any changes are made to the above project then you must notify the Ethics Committee.

Best wishes,  
 Mark Jones

### School of Psychology Research Ethics Committee

Cardiff University  
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 70 Park Place  
 Cardiff  
 CF10 3AT

Tel: +44(0)29 208 70360  
 Email: [psychethics@cardiff.ac.uk](mailto:psychethics@cardiff.ac.uk)  
<http://psych.cf.ac.uk/aboutus/ethics.html>

Prifysgol Caerdydd  
 Adeilad y Tŵr  
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Ffôn: +44(0)29 208 70360  
 E-bost: [psychethics@caerdydd.ac.uk](mailto:psychethics@caerdydd.ac.uk)

## Appendix F. Screen for Child Anxiety Related Disorders-Parent Version

### Screen for Child Anxiety Related Disorders (SCARED) PARENT Version—Page 1 of 2 (to be filled out by the PARENT)

Developed by Boris Birmaher, M.D., Suneeta Khetarpal, M.D., Marlane Cully, M.Ed., David Brent, M.D., and Sandra McKenzie, Ph.D., Western Psychiatric Institute and Clinic, University of Pittsburgh (October, 1995). E-mail: birmaherb@upmc.edu

See: Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. (1999). Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): a replication study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38(10), 1230-6.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

#### Directions:

Below is a list of sentences that describe how people feel. Read each phrase and decide if it is "Not True or Hardly Ever True" or "Somewhat True or Sometimes True" or "Very True or Often True" for your child. Then, for each statement, fill in one circle that corresponds to the response that seems to describe your child *for the last 3 months*. Please respond to all statements as well as you can, even if some do not seem to concern your child.

	0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True	
1. When my child feels frightened, it is hard for him/her to breathe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PN
2. My child gets headaches when he/she am at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SH
3. My child doesn't like to be with people he/she doesn't know well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SC
4. My child gets scared if he/she sleeps away from home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SP
5. My child worries about other people liking him/her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	GD
6. When my child gets frightened, he/she feels like passing out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PN
7. My child is nervous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	GD
8. My child follows me wherever I go.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SP
9. People tell me that my child looks nervous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PN
10. My child feels nervous with people he/she doesn't know well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SC
11. My child gets stomachaches at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SH
12. When my child gets frightened, he/she feels like he/she is going crazy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PN
13. My child worries about sleeping alone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SP
14. My child worries about being as good as other kids.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	GD
15. When my child gets frightened, he/she feels like things are not real.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PN
16. My child has nightmares about something bad happening to his/her parents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SP
17. My child worries about going to school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SH
18. When my child gets frightened, his/her heart beats fast.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PN
19. He/she child gets shaky.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PN
20. My child has nightmares about something bad happening to him/her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SP

**Screen for Child Anxiety Related Disorders (SCARED)**  
**PARENT Version—Page 2 of 2 (to be filled out by the PARENT)**

	0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True	
21. My child worries about things working out for him/her.	○	○	○	GD
22. When my child gets frightened, he/she sweats a lot.	○	○	○	PN
23. My child is a worrier.	○	○	○	GD
24. My child gets really frightened for no reason at all.	○	○	○	PN
25. My child is afraid to be alone in the house.	○	○	○	SP
26. It is hard for my child to talk with people he/she doesn't know well.	○	○	○	SC
27. When my child gets frightened, he/she feels like he/she is choking.	○	○	○	PN
28. People tell me that my child worries too much.	○	○	○	GD
29. My child doesn't like to be away from his/her family.	○	○	○	SP
30. My child is afraid of having anxiety (or panic) attacks.	○	○	○	PN
31. My child worries that something bad might happen to his/her parents.	○	○	○	SP
32. My child feels shy with people he/she doesn't know well.	○	○	○	SC
33. My child worries about what is going to happen in the future.	○	○	○	GD
34. When my child gets frightened, he/she feels like throwing up.	○	○	○	PN
35. My child worries about how well he/she does things.	○	○	○	GD
36. My child is scared to go to school.	○	○	○	SH
37. My child worries about things that have already happened.	○	○	○	GD
38. When my child gets frightened, he/she feels dizzy.	○	○	○	PN
39. My child feels nervous when he/she is with other children or adults and he/she has to do something while they watch him/her (for example: read aloud, speak, play a game, play a sport).	○	○	○	SC
40. My child feels nervous when he/she is going to parties, dances, or any place where there will be people that he/she doesn't know well.	○	○	○	SC
41. My child is shy.	○	○	○	SC

**SCORING:**

A total score of  $\geq 25$  may indicate the presence of an **Anxiety Disorder**. Scores higher than 30 are more specific. **TOTAL =**

A score of 7 for items 1, 6, 9, 12, 15, 18, 19, 22, 24, 27, 30, 34, 38 may indicate **Panic Disorder** or **Significant Somatic Symptoms**. **PN =**

A score of 9 for items 5, 7, 14, 21, 23, 28, 33, 35, 37 may indicate **Generalized Anxiety Disorder**. **GD =**

A score of 5 for items 4, 8, 13, 16, 20, 25, 29, 31 may indicate **Separation Anxiety SOC**. **SP =**

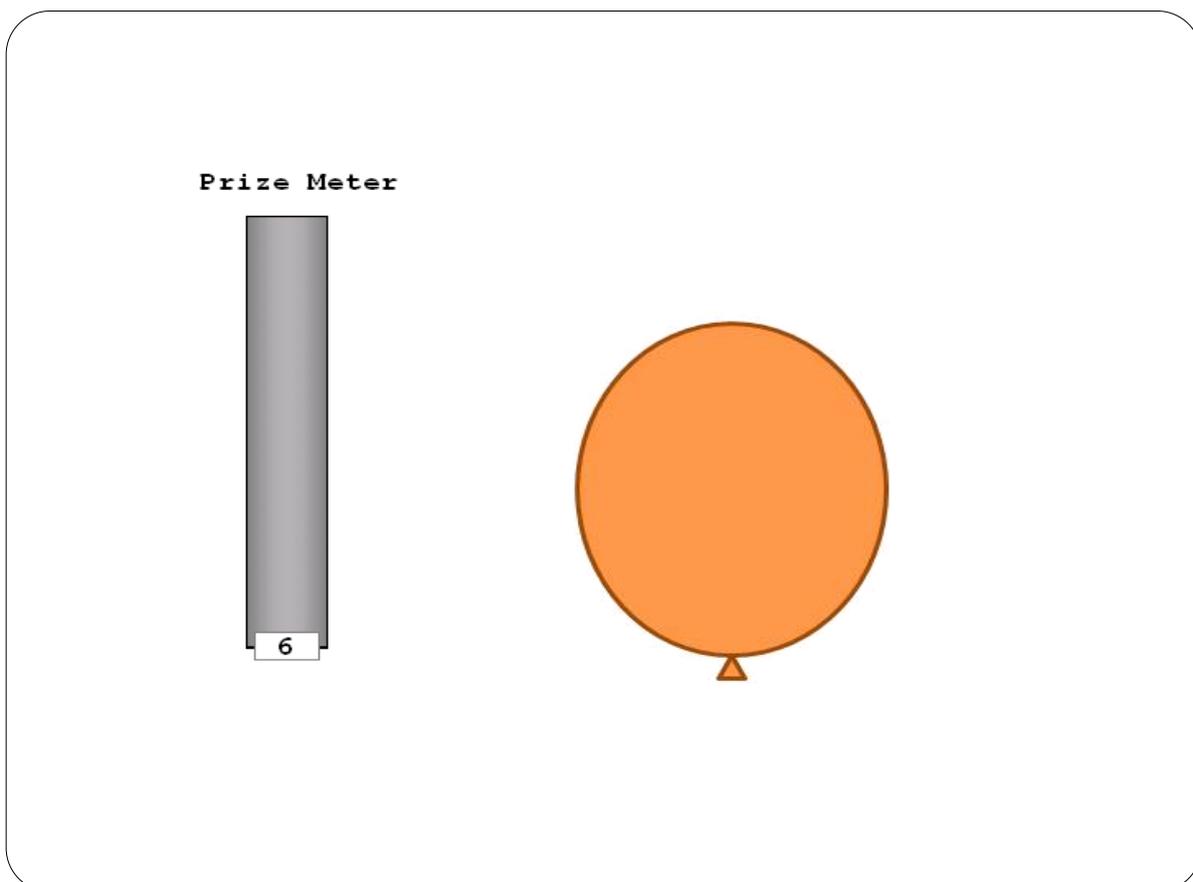
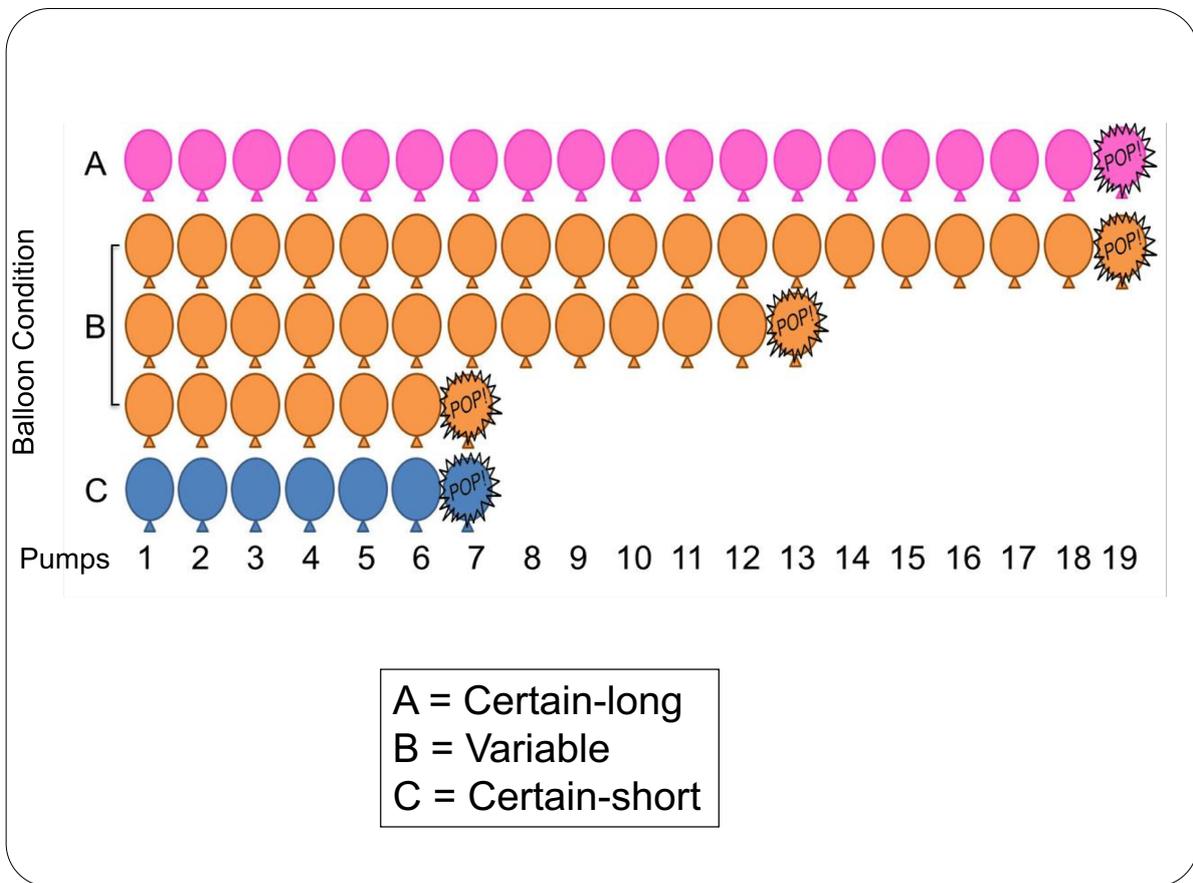
A score of 8 for items 3, 10, 26, 32, 39, 40, 41 may indicate **Social Anxiety Disorder**. **SC =**

A score of 3 for items 2, 11, 17, 36 may indicate **Significant School Avoidance**. **SH =**

*The SCARED is available at no cost at [www.wpic.pitt.edu/research](http://www.wpic.pitt.edu/research) under tools and assessments, or at [www.pediatric.bipolar.pitt.edu](http://www.pediatric.bipolar.pitt.edu) under instruments.*

March 27, 2012

**Appendix G. Balloon Emotional Learning Task (BELT) - Balloon conditions and example of task display.**



Pop!

Prize Meter



You earned 12 points!

## Appendix H. NDAU Parent Consent Form



### STUDY CONSENT FORM

(for parents of children aged 4-7 years)

This is to be completed by parents/care-givers on behalf of their child and themselves.

Please initial box

1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation and that of my child is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.
3. I am happy for the research team to make contact with me if there are any future research studies that might be of interest to me.
4. I agree for my child to perform the developmental assessments as part of the study named above, including measuring my child's heart-rate.
5. I agree to complete the parental interview and questionnaires as part of the study named above.
6. I understand that relevant sections of my child's data collected during the study (including my ratings about my child on the Strengths and Difficulties Questionnaire) may be looked at by individuals from the NDAU study team, from regulatory authorities or by my child's referring agent, where it is relevant to their taking part in this research. I give permission for these individuals to have access to my child's data.
7. I understand that an assessment report of my child's strengths and difficulties will be sent to the referring agent to guide their intervention with my child within the school environment. I understand that I do not receive a copy of this report.
8. I understand that a video recording will be made of my child's assessments for research, safety and training purposes. I understand that brief clips from the video may be used to illustrate important aspects of child development, and to train new researchers, and so such clips may be shown to students or at professional meetings. I give consent for such clips to be taken from this video record, with the understanding that my name or my child's name will never be associated with the video clip. I understand that the video will remain in the possession of Prof. Van Goozen and the NDAU research team, and will never be given to other unauthorised individuals.

9. I agree that assessment can be linked to routinely collected, anonymised datasets (such as those held in the Secure Anonymised Information Linkage [SAIL] databank), in order to answer future questions related to mental health. I understand that the data within any such dataset will be fully anonymised and my child would not be identifiable in any way.

\_\_\_\_\_  
Name of parent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name of person taking consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

The information provided will be held in compliance with GDPR regulations. Cardiff University is the data controller and Matt Cooper is the data protection officer ([inforequest@cardiff.ac.uk](mailto:inforequest@cardiff.ac.uk)). The lawful basis for processing this information is public interest. This information is being collected by Professor Stephanie van Goozen.

The information on the consent form will be held securely and separately from the research information. Only the researcher will have access to this form and it will be destroyed after 7 years. The research information you provide will be used for the purposes of research only and will be stored securely. Only members of the NDAU research team will have access to this information. After 7 years the data will be anonymised (any identifying elements removed) and this anonymous information may be kept indefinitely or published.

### Appendix I. Chi square test of independence (4-5 year old group compared to 6+ group)

	% Scoring Symptoms Aa Absent (4-5 Years)	% Scoring Symptoms as Absent (6+ Years)	Pearson Chi -Square	Sig.
1. When my child feels frightened, it is hard for him/her to breathe.	75.3	79.3	.520	.471
2. My child get headaches when he/she is at school.	88.2	79.1	3.188	.074
3. My child doesn't like to be with people he/she doesn't know well.	40.9	41.3	.005	.946
4. My child gets scared if he/she sleeps away from home.	63.7	53.6	2.297	.130
5. My child worries about other people liking him/her.	51.6	36.7	5.072	.024
6. When my child gets frightened, he/she feels like passing out.	98.9	95.0	2.596	.107
7. My child is nervous.	46.2	37.4	1.795	.180
8. My child follows me wherever i go.	31.2	34.3	.243	.622
9. People tell me that my child looks nervous.	84.8	80.7	.632	.427
10. My child feels nervous with people he/she i doesn't know well.	40.9	44.3	.268	.605
11. My child gets stomach-aches at school.	79.6	70.7	2.292	.130
12. When my child gets frightened, he/she feels like he/she is going crazy.	71.0	73.4	.162	.687
13. My child worries about sleeping alone.	44.1	42.1	.086	.769
14. My child worries about being as good as other kids.	54.8	49.3	.690	.406
15. When he/she gets frightened, he/she feel like things are not real.	81.5	79.3	.175	.676
16. My child has nightmares about something bad happening to his/her parents.	78.5	69.3	2.402	.121
17. My child worries about going to school.	58.1	51.4	.991	.320
18. When my child gets frightened, his/her heart beats fast.	54.9	52.1	.174	.677
19. He/she gets shaky.	81.7	79.3	.209	.648
20. My child has nightmares about something bad happening to him/her.	66.7	64.3	.140	.709
21. My child worries about things working out for him/her.	71.0	58.6	3.706	.054
22. When my child gets frightened, he/she sweats a lot.	83.7	78.6	.932	.334
23. My child is a worrier.	60.9	54,3	.981	.322
24. My child gets really frightened for no reason at all.	66.7	65.7	.023	.878
25. My child is afraid to be alone in the house.	58.0	60.6	.154	.695
26. It is hard for my child to talk with people he/she doesn't know well.	48.4	47.1	.035	.852
27. When my child gets frightened, he/she feel like he/she is choking.	93.5	92.9	.042	.838
28. People tell me that my child worries too much.	88.2	80.7	2.277	.131
29. My child doesn't like to be away from his/her family.	34.4	33.8	.009	.925
30. My child is afraid of having anxiety (or panic) attacks.	95.7	89.1	3.098	.078

31. My child worries that something bad might happen to his/her parents.	74.2	58.6	5.979	.014
32. My child feels shy with people he/she doesn't know well.	44.1	35.0	1.946	.163
33. My child worries about what is going to happen in the future.	77.4	60.7	7.095	.008**
34. When my child gets frightened, he/she feels like throwing up.	87.1	82.9	.769	.381
35. My child worries about how well he/she does things.	46.2	35.0	2.953	.086
36. My child is scared to go to school.	74.2	72.9	.051	.821
37. My child worries about things that have already happened.	57.0	57.6	.007	.932
38. When my child gets frightened, he/she feels dizzy.	93.5	86.2	3.082	.079
39. My child feels nervous when he/she is with other children or adults and he/she has to do something while they watch him/ her (for example: read aloud, speak, play a game, play a sport.)	51.6	40.7	2.681	.102
40. My child feels nervous when he/she is going to parties, dances, or any place where there will be people that he/ she doesn't know well.	44.1	47.9	.320	.572
41. My child is shy.	53.3	48.2	.567	.452

Note. \*\*  $p < .01$