Title: Children's Moods, Fears and Worries Questionnaire: Validity with young children at risk for internalising problems.

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Abstract

This study tested psychometric properties of the Children's Moods, Fears and Worries Questionnaire (CMFWQ) with a population sample of children at risk for developing internalising problems. The CMFWQ was completed by 489 parents of 5-year-old children who had been screened for temperamental inhibition in preschools across eight government areas of Melbourne, Australia. Parents also completed the Strengths and Difficulties Questionnaire (SDQ) and Anxiety Diagnostic Interview Schedule (ADIS-P-IV). In this inhibited sample of children, the CMFWQ showed high internal consistency of items ($\alpha = .95$). The CMFWQ demonstrated convergent validity with the SDQ 'emotional symptoms' subscale and discriminant validity with the 'conduct problems' subscale. Supporting criterion validity, the CMFWQ significantly distinguished between groups of inhibited children with versus without ADIS anxiety disorders. Psychometric properties of the CMFWQ now extend to young inhibited children who are at risk for developing internalising problems as they grow.

Introduction

One in five children are affected by mental health problems in Australia and internationally (Belfer, 2008; Sawyer et al., 2001). In children mental health problems most commonly present as internalising (anxiety, depression) and externalising (aggression, hyperactivity, oppositional defiance) difficulties (Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). During early childhood development parent report questionnaires are an essential assessment tool. Parents are typically the only informants who are able to provide comprehensive data on a young child's mood and associated behaviour across a variety of times and contexts (Achenbach & McConaughy, 1992). Parents' descriptions of their own child may be susceptible to some biases. Nevertheless there is evidence to show that parents' perception of their children is not as prone to distortion as some portray. Richters (1992) reviewed 22 studies that claimed evidence for bias in parent perceptions of their children, finding that none met key necessary criteria for establishing a distortion. Ratings by depressed mothers of their child's problematic behaviours have been separately corroborated by fathers (Cicchetti, Rogosch, & Toth, 1998). Further, depressed mothers' ratings were found to be no different to those of non-depressed mothers when rating children on carefully scripted, standardised behaviours (Baumann, Pelham, Lang, Jacob, & Blumenthal, 2004). In a recent review, Whitcomb and Merrell (2013) reported that parent questionnaires are the most psychometrically adequate method of assessment for young children's mental health related problems.

There are two parent questionnaires currently widely used to assess children's internalising problems: the Child Behaviour Checklist (CBCL: Achenbach & Rescorla, 2000) and the Behaviour Assessment System for Children, Second Edition (BASC-2: Reynolds & Kamphaus, 2004). These questionnaires have been well validated to assess older children's internalising problems, but their early childhood extensions show some limitations.

Downward extensions of the school-aged versions were applied to the early childhood period. Furthermore, a single item set covers early toddler through to school entry age, which is a developmentally varied period. Developmental sensitivity of assessment within this early period may be limited since behaviours that signal socio-emotional problems can be qualitatively different from toddler to school age (Carter, Briggs-Gowan, & Davis, 2004; Konold, Hamre, & Pianta, 2003). Some recent research has indicated that the CBCL and BASC-2 internalising scales have limited convergent validity with one another in early childhood samples (Myers, Bour, Sidebottom, Murphy & Hakman, 2010).

One alternative parent-report questionnaire that focuses on early childhood development in particular is the Infant-Toddler Social and Emotional Assessment (ITSEA: Carter & Briggs-Gowan, 2000), with four distinct item sets for ages 12, 18, 24 and 36 months. Nevertheless the ITSEA has some limitations. It does not cover preschool children 3-6 years of age, and it considers emotional dysregulation and internalising symptoms as separate constructs despite empirical findings of substantial inter-correlations (Carter, Briggs-Gowan, Jones & Little, 2003).

The Children's Moods, Fears and Worries Questionnaire (CMFWQ: Bayer, Sanson, & Hemphill, 2006) was created in response to a need for developmentally sensitive assessment tools for young children's internalising problems. The CMFWQ was designed to measure internalising symptoms presenting in toddler and preschool age children. Bayer and colleagues (2006) undertook extensive literature review during initial development to identify a broad range of potential internalising indicators relevant to young children and established face validity via a pilot test. Next, exploratory factor analysis was conducted with a community sample of 112 families with young children at ages two and then four years. At each age an 'internalising component' was extracted, including items relating to anxiety, behavioural inhibition, peer anxious-withdrawal, separation insecurity, somatisation, and

depression. Interestingly from a developmental psychology point of view, the factor analyses and loadings highlighted that early childhood internalising problems consist of a mixture of items from these traditionally distinct areas. Despite the fact that these various indicators are emphasised in different theoretical research fields, they were all closely interrelated at these ages indicating construct overlap (Bayer et al., 2006). The internalising components identified at toddler and preschool ages significantly predicted continuity to seven years of age (Bayer, Hastings, Sanson, Ukoumunne, & Rubin, 2010).

Research to date on the CMFWQ in Australia and the Netherlands shows initially promising reliability and validity based on general community samples (Bayer, et al., 2006, 2010; Broeren & Muris, 2008), and a hospital clinic sample (Andrijic, Bayer, & Bretherton, 2013). The CMFWQ showed strong internal item consistency (Cronbach's alpha .92 - .95; Spearman Brown split-half .84 - .91) (Bayer et al., 2006, 2010; Broeren & Muris, 2008). Test-retest reliability was demonstrated across time periods ranging from two to five years ($r = .36 - .63$) (Bayer et al., 2006, 2010). Convergent validity was established based on substantial positive correlations with the BASC-2 internalising subscale ($r = .65$), CBCL internalising subscale ($r = .61$), and Preschool Anxiety Scale ($r = .77$) (Andrijic et al., 2013; Broeren & Muris, 2008). There was evidence of discriminant validity, where the CMFWQ had lower correlations with the CBCL and BASC-2 externalising subscales ($r = .26$, $r = .48$, respectively) (Andrijic et al., 2013). Most recently, criterion validity was established with a hospital clinic sample. The CMFWQ differentiated between children with and without DSM anxiety disorders (diagnosis $M = 2.88$, no diagnosis $M = 2.17$, $p < .05$) and number of anxiety diagnoses correlated with CMFWQ symptom scores ($r = .74$, $p < .001$) (Andrijic et al., 2013). A CMFWQ clinical cut-point for internalising problems (≥ 2.87) was created via receiver operating curves in alignment with both the BASC-2 (sensitivity 91%, specificity

95%) and CBCL (sensitivity 69%, specificity 85%) clinical cut-points for internalising problems. Overall, initial psychometric properties for the CMFWQ are promising.

The present study aimed to extend psychometric evaluation of the CMFWQ to a new population of relevance by focusing attention on ‘temperamentally inhibited’ young children. This subgroup is commonly discussed in the developmental psychology literature as at highest risk for developing anxiety and related emotional difficulties (Bayer & Sanson, 2003). Inhibited children can have a biological predisposition to shyness and sensitivity to their surroundings (Rubin, Coplan, & Bowker, 2009). Rubin and Mills’ (1991) early theoretical work described a ‘temple of doom’ pathway for the development of child internalising problems from inhibition. Inhibited children become anxious and upset easily, which can place stress on parents. Child inhibition (when combined with other family stresses) can elicit unhelpful negative parenting interactions that over time result in child social withdrawal and internalising problems (anxiety, loneliness, depression) (Bayer & Sanson, 2003). In developmental research since Rubin and Mills’ theoretical beginnings, inhibited temperament has become known as the single strongest risk for young children to develop anxiety along with broader internalising problems as they grow (Biederman, et al., 2001; Clauss & Blackford, 2012; Hirshfeld-Becker et al., 2008; Muris, van Brakel, Arntz, & Schouten, 2011; Rapee, Schniering, & Hudson, 2009). To give one illustration, Clauss and Blackford’s (2012) meta-analysis focused on social fear showed that child temperamental inhibition gave a greater than sevenfold increase in risk for developing anxiety disorder. In early childhood educational and health settings, inhibited (i.e., very shy/sensitive) young children often present with their parents who are concerned about higher than usual child fears and related concerns about emotional distress. Parents with inhibited young children seek some clarifying assessment and possible early intervention assistance around the time of transition from childcare/preschool into school (i.e., age 4-5 years). Therefore there is a

strong conceptual rationale for establishing the validity of the CMFWQ in the subpopulation of highly behaviourally inhibited young children. With temperamentally inhibited young children from the general population, we aimed to determine the CMFWQ's internal consistency reliability together with convergent, discriminant and criterion-related validity alongside widely used alternative child mental health measures.

Material and methods

Procedure

This study was conducted as part of a wider prevention project *Cool Little Kids*, with detailed methodology published elsewhere (Bayer et al., 2011). In 2011 and 2012 across eight diverse government districts of Melbourne, Australia, all preschool services with a government funded 4-year-old program were invited to participate. Uptake was high at 78% of preschool services (Beatson, et al., 2014). The participating preschools distributed a screening questionnaire for inhibition to all parents of children enrolled in their year before starting school. Parents returned these confidentially to the study team ($n = 6,346$, 36% response) (Beatson, et al., 2014). The study team confidentially notified all participating parents of their child's inhibition status. In total, 11% of preschool children screened across the population were inhibited (Beatson, et al., 2014). The parents with inhibited children were invited to participate in the prevention trial and enrolment was high (78%, $N = 545$). The parents of inhibited children in the trial were then contacted a year after recruitment to conduct assessments of child internalising problems and anxiety diagnoses. All materials and procedures were approved by the Human Research Ethics Committees at the Royal Children's Hospital Melbourne (HREC 30105) and La Trobe University (HEC13-022).

Participants

Participants for the present study were the inhibited population sample a year after trial recruitment ($N = 497$ 5-year-olds, 91% retention). Socio-demographic characteristics of the

sample are presented in Table 1. Mothers were born in a range of different countries, reflecting national census data where 26% of Australians are born overseas (Australian Bureau of Statistics: ABS, 2011a). Likewise, the proportion of mothers with a non-English speaking background was consistent with national census data where 19% speak a language other than English at home (ABS, 2011a). The proportion of tertiary educated parents was higher than Australia's national average matched for age, but this is typical in research and the sample still spanned a full range of education levels. In the sample, mothers' mental health was comparable to Australian norms (Depression Anxiety Stress Scales, DASS: depression $M = 4.3$, $SD = 7.0$; anxiety $M = 2.9$, $SD = 4.6$; stress $M = 7.6$, $SD = 8.1$; Crawford, Cayley, Lovibond, Wilson, & Hartley, 2011). The neighbourhood disadvantage score (Socio-economic Indexes for Areas: SEIFA) of the sample was also comparable to Australia's national average (ABS, 2011b; $M = 1000$, $SD = 100$). Finally, the retained sample a year post recruitment was almost identical to the recruited sample with regard to sociodemographic characteristics (cf. Beatson et al., 2014).

Measures

Inhibition Subscale of The Short Temperament Scale for Children (Pedlow, Sanson, Prior, Oberklaid, 1993). The inhibition scale was in the screening questionnaire administered when children were four years of age. The subscale consists of seven items enquiring about a child's degree of comfort when encountering new people or situations (e.g. "My child is shy with strange adults", "The first time my child is left in a new situation without mother, he/she gets upset"). Items are scored on a six-point scale ranging from 1 (*almost never*) to 6 (*almost always*). A child's inhibition score is the mean score across the seven items. The subscale has construct validity via factor analysis, as well as substantial within case stability over time (e.g., $r = .73$ from age 44-52 months to 57-78 months) (Pedlow et al., 1993). Children

scoring above 30 are categorised as temperamentally inhibited (Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005).

Children's Moods, Fears and Worries Questionnaire (CMFWQ: Bayer et al., 2006).

The CMFWQ (previously detailed above) was administered a year after recruitment at child age five years. In the preschool developmental phase 38 items are included (e.g., “Has many worries, often seems worried”, “Cries for long periods”). Items are scored on a five-point scale range from 1 (*almost never*) to 5 (*almost always*). A child's overall internalising symptom score is the mean score across the 38 items, with a clinical cut-point of ≥ 2.87 . As described above, the CMFWQ has demonstrated initial reliability and validity with community samples and a clinic sample (Andrijic et al., 2013; Bayer et al., 2006; Broeren & Muris, 2008).

Strengths and Difficulties Questionnaire (SDQ: Goodman, 1997). The SDQ was also administered a year after recruitment at child age five years. The SDQ is widely used internationally as a brief measure of emotional and behavioural problems in preschool and school age children. The ‘emotional symptoms’ subscale aligns with internalising symptoms (e.g., “Many fears, easily scared”, “Often unhappy, depressed or tearful”) and the ‘conduct problems’ subscale aligns with externalising symptoms (e.g., “Often fights with other children or bullies them”, “Often lies or cheats”). Each subscale comprises five items measured on a three-point scale ranging from 0 (*not true*) to 2 (*certainly true*). A child's score for each subscale is the mean score across its five items. The SDQ has established reliability and validity as a brief screener for children's mental health. To illustrate, an Australian study (Hawes & Dadds, 2004) demonstrated moderate internal consistency (emotional symptoms $\alpha = .66$, conduct problems $\alpha = .66$) along with test-retest reliability over 12 months (emotional symptoms $r = .71$, conduct problems $r = .65$). Adequate validity

was also evidenced through consistent factor loadings across the subscales and a predictive relationship between the subscales and clinical diagnoses.

Anxiety Disorders Interview Schedule for DSM-IV: Parent Version (ADIS-P-IV: Silverman & Albano, 1996). This diagnostic measure of child anxiety was administered a year after recruitment at child age five years. The ADIS-P-IV is a semi-structured interview delivered by trained clinicians to parents to assess for the presence or absence of child anxiety disorders. The ADIS-P-IV was originally designed to assess children age 6-18 years but shows acceptable psychometric properties for children as young as age four (Rapee et al., 2005). Diagnostic interviews were conducted by telephone, which has demonstrated validity and is cost effective (Lyneham & Rapee, 2005). Diagnoses of separation anxiety, social phobia, specific phobia, and generalised anxiety were included since these early internalising disorders are most reliably identified in young children (Edwards, Rapee, Kennedy, & Spence, 2010). Parents report on various specific anxiety symptoms (e.g., “Does your child have any really specific fears?”) as either present (*yes*) or absent (*no*). Parents also rate the degree of their child’s life impairment from their symptoms on a nine-point scale ranging from 0 (*not at all*) to 8 (*very, very much*). Specific sets of symptom endorsement when associated with significant impairment (score ≥ 4) determine whether a child meets DSM-IV diagnostic criteria for each of the anxiety disorders.

Analysis strategy

Data were analysed using IBM SPSS Statistics 22. Cronbach’s alpha and Spearman Brown split half analyses were applied to assess internal consistency of the CMFWQ with the inhibited population sample. To assess convergent and discriminant validity with the inhibited sample, Pearson correlations were calculated for the relationship between CMFWQ scores and SDQ emotional and conduct problems subscales. Pearson correlation also assessed if inhibited children with more anxiety diagnoses had higher CMFWQ scores. For

criterion validity, independent samples t-tests compared whether inhibited children with anxiety disorders had higher CMFWQ symptoms compared to those without anxiety disorders. In a final analysis, chi-square and odds ratios (with a supplementary specificity/sensitivity statistic) explored the degree to which for inhibited children the CMFWQ clinical cut-point for broad internalising problems might predict presence of a narrower specific anxiety disorder.

Results

Distributions for inhibited young children's mental health are presented in Table 2. In this population sample of inhibited children girls had slightly higher internalising problems than boys. On the CMFWQ as well as on SDQ emotional symptoms, mean scores for inhibited girls were higher than for inhibited boys ($t(489) = 1.51, p < .01, t(448) = 3.50, p < .01$, respectively). On the ADIS-P-IV, inhibited girls were more likely to reach diagnostic criteria for an anxiety disorder than inhibited boys ($\chi^2(1) = 7.17, p < .01$). In particular girls had higher rates of separation anxiety disorder ($\chi^2(1) = 4.64, p < .05$) and social phobia ($\chi^2(1) = 5.34, p < .05$) than inhibited boys. Inhibited girls and boys had similar rates of specific phobia ($\chi^2(1) = 0.05, p = .83$) and generalised anxiety disorder ($\chi^2(1) = 0.12, p = .73$). For externalising problems there were no gender differences for inhibited young children ($t(448) = 0.37, p = .14$).

In Table 3, other early childhood samples' internalising distributions are presented to compare with the inhibited sample. The inhibited sample had higher internalising difficulties measured by the CMFWQ compared to a community sample of 4-year-olds in Victoria, Australia (Bayer et al., 2006). The inhibited sample had lower internalising difficulties than a hospital clinic sample measured on the CMFWQ in Victoria, Australia (Andrijic et al., 2013). Compared to age-matched norms on the SDQ the inhibited sample also had more emotional symptoms. In the inhibited sample the rate of anxiety disorders was likewise higher than

epidemiological population surveys (Bufferd, Dougherty, Carlson, Rose & Klein, 2012; Egger & Angold, 2006; Ford, Goodman & Meltzer, 2003; Lavigne, LeBailly, Hopkins, Gouze & Binns, 2009; Wichstrom et al., 2012). Finally, this inhibited population sample had slightly lower rates of anxiety disorders than Rapee et al.'s (2005) university-based study of inhibited children.

Reliability of the CMFWQ with the inhibited population sample was assessed via Cronbach's alpha and Spearman-Brown split half coefficients. Internal consistency was high, with alpha .95 and split half reliability .90. CMFWQ convergent and discriminant validity with inhibited children were assessed by correlating with the SDQ emotional symptoms and conduct problems subscales respectively. There was a strong positive correlation for the CMFWQ with SDQ emotional symptoms ($r = .71$, $p < .001$, 95% CI (.66 – .76)). A substantially lower positive correlation was found between the CMFWQ and SDQ conduct problems ($r = .49$, $p < .001$, 95% CI (.41 – .57)).

In relation to criterion validity, inhibited children's CMFWQ scores were compared to anxiety diagnoses on the ADIS-P-IV (Table 4). On average, inhibited children with anxiety disorders had higher CMFWQ internalising scores across the ADIS-P-IV disorder types, with medium to large effect sizes (Newton & Rudestam, 1999). A medium to large positive correlation was also found between the number of anxiety diagnoses and CMFWQ internalising scores ($r = .54$, $p < .001$, 95% CI (.48 – .59)). Finally, as a minor supplementary analysis we explored if the CMFWQ clinical cut-point for internalising problems more broadly might be able to reliably detect particular specific anxiety diagnoses (Table 5). The odds ratio highlighted a strong likelihood for inhibited children in the clinical range for internalising problems on the CMFWQ (≥ 2.87) to have an anxiety disorder. Specificity was high (89-97%), which indicates that inhibited children scoring below the CMFWQ clinical range for internalising problems were highly unlikely to have an anxiety disorder. However

the sensitivity of this cut-point score (set for broader internalising problems) was comparatively low (at 27-56%). Sensitivity indicates that a proportion of inhibited children with an anxiety disorder can score below the CMFWQ's clinical range that is set for broader internalising (including depressive) difficulties. Of interest and perhaps in line with this view, with young inhibited children the CMFWQ's clinical cut-point (for broader internalising problems) appeared to pick up co-occurring (comorbid) anxiety subtypes more often (specificity 86%, sensitivity 56%), as well as separation anxiety disorder (specificity 92%, sensitivity 44%), while being somewhat less sensitive to uni-situational specific phobias (specificity 90%, sensitivity 29%).

Discussion

This study with young temperamentally inhibited children in the general population builds on the psychometric reliability and validity of the CMFWQ. It was important to focus on inhibited young children in a psychometric study for the CMFWQ to directly test its suitability with this at risk subgroup. Inhibited preschool children are frequently discussed in the field of developmental psychology as at significant potential risk for developing anxiety and related broader internalising problems as they grow. Parents with young inhibited children often present in early childhood education and health settings seeking some clarifying assessment and assistance with regard to school readiness and emotional development at this transition time (around 4-5 years of age). With this subpopulation of children at potential developmental risk for internalising problems the CMFWQ had high item internal consistency, demonstrated concurrent and discriminant validity with SDQ emotional symptoms and conduct problems subscales, and showed criterion validity with ADIS-P-IV anxiety disorders. These findings strongly support the reliability and validity of the CMFWQ with temperamentally inhibited children living in the general population.

The CMFWQ's psychometric properties found in this study with temperamentally inhibited children were consistent with those obtained in prior community and clinic samples. First, reliability of the CMFWQ with inhibited children (alpha .95, split half .90) was comparable to reliability found with community samples in Australia and the Netherlands (alpha .92 - .95, split half .84 - .90) (Bayer, et al., 2006, 2010; Broeren & Muris, 2008). With inhibited children the degree of convergent validity between the CMFWQ and SDQ emotional symptoms ($r = 0.71$) was similar to prior findings between the CMFWQ and CBCL internalising problems ($r = 0.65$), BASC-2 internalising problems ($r = .61$) and the Preschool Anxiety Scale ($r = .77$) (Andrijic et al., 2013; Bayer et al., 2006; Broeren & Muris, 2008). For discriminant validity with inhibited children, the CMFWQ showed less relationship to SDQ conduct problems ($r = .49$). This was in line with Andrijic et al.'s (2013) hospital clinic study findings where CMFWQ related less to CBCL and BASC-2 externalising problems ($r = .26$, $r = .48$, respectively). As there is commonly comorbidity between children's internalising (emotional) and externalising (conduct behavioural) problems it is typical for some degree of correlation to exist (Reynolds & Kamphaus, 2004; Myers et al., 2010).

On criterion validity, the findings of this study with inhibited children are both consistent with prior CMFWQ research and also extend the field. The CMFWQ was able to effectively discriminate between inhibited young children with versus without anxiety disorders in a manner that replicated Andrijic et al.'s (2013) results with a hospital clinic sample. Interestingly, the present study's findings with inhibited children suggest that the CMFWQ clinical cut-point for broader internalising problems may more easily pick up children who have separation anxiety disorder as well as co-occurring (comorbid) anxiety subtypes. When approaching school entry age, severe separation anxiety is likely to reflect more pervasive internalising problems for a child (as would co-occurring anxiety subtypes).

In contrast, specific phobias are more limited to a circumscribed set of narrow situations (e.g., dog phobia). Similarly, social anxiety is precipitated by social activities and generalised anxiety by performance-based activities; developmentally these could be considered less prominent as core daily activities for most young (preschool) children.

As a more minor supplementary analysis, this study also explored if the CMFWQ's clinical cut-point set for broader internalising problems might have some capacity to efficiently detect specific narrow-band subtypes of diagnosed anxiety disorder. This finding indicated that a proportion of inhibited children who have a particular anxiety disorder may still fall below the CMFWQ's clinical range for broader (and perhaps more severe) internalising problems. In the developmental field, some other recent research has identified a similar pattern when exploring the CBCL's clinical cut-point for broad internalising problems as a potential screen for narrower anxiety disorders (Aschenbrand, Angelosante & Kendall, 2005). The CBCL's cut-point for internalising problems (T score ≥ 60) similarly showed high specificity combined with lower sensitivity to detect narrower anxiety disorders. This makes sense because clinical internalising problems encompass domains beyond anxiety, including depression symptoms that are associated with more impairment than anxiety (Slade, et al., 2009). To illustrate, it is possible that a 4-year-old child who barely meets criteria for a social anxiety disorder (having only mild impairment within the 0-8 range) could be below the CMFWQ internalising clinical cut-point. In contrast, a 7-year-old child meeting criteria for specific, social, generalised and separation anxiety disorders along with depressive symptoms might be expected to be in the CMFWQ's clinical internalising range. Perhaps consistent with this view, the small subgroup of 5-year-olds in the present study with co-occurring (multiple) anxiety disorders showed the highest CMFWQ cut-point sensitivity score.

It is important to highlight for practice that the CMFWQ was not designed to substitute for in depth diagnostic interview of specific types of anxiety disorders that may be present in children. It appears that inhibited young children without any anxiety disorders can be quite reliably screened out if they score below the CMFWQ's clinical cut-point which is set for broader internalising (anxious/depressive) problems. However there will still be a proportion of inhibited young children who could have an anxiety disorder when they lie below the clinical range for more severe (broader) internalising problems. Therefore, when using the CMFWQ as a relatively brief tool in clinical practice, if a young child scores below the internalising cut-point, yet has highly elevated scores on anxiety sub-items, this could be a prompt for some further in depth diagnostic interview exploring particular narrow-band anxiety disorders.

The present study had several strengths. A population level recruitment strategy achieved a large sample of inhibited children spanning a representative range of socio-demographic characteristics. Uptake across the population into the study was high for both preschools engaging in inhibition screening (78% of eligible) and parents into the trial (78% with inhibited children). Given that inhibition is the single strongest potential risk for young children developing internalising problems as they grow, the sample represents a subpopulation likely to present to education and health services requesting some assessment and assistance. One limitation of this study was that not all parents enrolled at participating preschools returned screening questionnaires (36% of enrolments). This response rate is nevertheless similar to that typically achieved by postal surveys in research (McLean et al., 2014; Rapee et al., 2005). Another potential limitation was that a sample consisting of only inhibited children might restrict or attenuate range on the key research variables. However restricted range tends to reduce potential relationships between variables, which would render our psychometric findings conservative (not inflated) in bias. Further research to build

psychometric properties of the CMFWQ could establish population norms. An ideal would be to measure a large population representative sample of children at toddler, preschool, and school entry ages. Full population norms would enhance interpretation of any individual child's CMFWQ score in comparison with age-matched peers.

In conclusion, identification of internalising problems early in life is a new and important field. Preschool children with temperamental inhibition are widely recognised to be a group at risk for developing anxiety and related emotional problems as they grow, because they already show early behavioural indicators and symptoms. The CMFWQ was developed to be a developmentally sensitive, brief but still quite comprehensive parent questionnaire for young children's internalising (anxious/depressive) problems. With a large population sample of inhibited children at risk for developing internalising problems at the transition from preschool to school age the psychometric properties of the CMFWQ were strengthened. Internal consistency, convergent, discriminant and criterion validity were established with temperamentally inhibited young children. Further research is recommended to established full population representative norms with toddler, preschool, and school-entry age bands.

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Table 1

Socio-demographic Characteristics of Sample^a (N= 497)

Characteristic	Statistic ^b
<i>Children</i>	
Inhibition score ^c <i>M (SD)</i>	34.1 (2.7)
Age in years <i>M (SD)</i>	5.8 (0.4)
Male (%)	51.5
First born (%)	51.5
<i>Family (primary caregivers 94% mothers)</i>	
Married/de facto (%)	92.6
Parent age in years <i>M (SD)</i> (mothers / fathers)	37.7 (4.3) / 39.5 (4.8)
Parent education status (%) (mothers / fathers)	
Did not complete high school	11.0 / 16.7
Completed high school only	22.9 / 26.9
Completed tertiary/postgraduate degree	66.1 / 56.4
Maternal country of birth (%)	
Australia/New Zealand	74.0
America/UK/Europe	11.3
Africa/Middle East/Asia	13.7
Language other than English at home (%)	11.5
Annual household income (optional item <i>n</i> = 419) \$AUD (%)	
< 25,000	4.1

25,000 – 51,900	12.9
52,000 – 88,400	22.4
> 88,400	60.6

Maternal mental health^d *M (SD)*

Depression	4.6 (5.8)
Anxiety	3.0 (4.5)
Stress	10.5 (7.2)

Neighbourhood

Socioeconomic disadvantage score ^e <i>M (SD)</i>	1046.4 (43.1)
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^aIncludes families participating at child age 5 years (demographic variables measured at child age 4 years). ^bStatistics based on 457 – 497 participants unless otherwise specified. ^c Short Temperament Scale for Children (Pedlow et al., 1993). ^dDASS (Lovibond & Lovibond, 1996). ^eSEIFA (ABS, 2011b).

Table 2

Mental Health for the Population Sample of Inhibited Young Children

	Full sample (<i>N</i> = 497)	Boys (<i>n</i> = 256)	Girls (<i>n</i> = 241)
<i>Children's Moods, Fears & Worries Questionnaire</i> ^a (<i>n</i>)	489	251	238
internalising symptoms <i>M</i> (<i>SD</i>)	2.29 (.55)	2.26 (.50)	2.33 (.60)
clinical level (≥ 2.87) <i>n</i> (%)	70 (14%)	28 (11%)	42 (17%)
<i>Strengths and Difficulties Questionnaire</i> ^b (<i>n</i>)	448	233	215
emotional symptoms <i>M</i> (<i>SD</i>)	2.68 (2.07)	2.36 (1.80)	3.03 (2.28)
conduct problems <i>M</i> (<i>SD</i>)	1.42 (1.45)	1.45 (1.39)	1.40 (1.51)
<i>Anxiety Disorders Interview Schedule</i> (<i>n</i>)	488	253	235
anxiety disorder <i>n</i> (%)	231 (47%)	105 (41%)	126 (52%)
social phobia <i>n</i> (%)	148 (30%)	65 (25%)	83 (34%)
specific phobia <i>n</i> (%)	108 (22%)	57 (22%)	51 (21%)
separation <i>n</i> (%)	87 (18%)	36 (14%)	51 (21%)
generalised <i>n</i> (%)	65 (13%)	35 (14%)	30 (12%)

Note. All are valid percents.

^aScale range = 1.00 - 5.00. ^bScale range = 0 - 2.00.

Table 3

Comparative Internalising Problems In Other Early Childhood Samples

Published studies' sample characteristics	CMFWQ <i>M (SD)</i> ^a	SDQ emotional symptoms <i>M (SD)</i> ^b	Rates of anxiety diagnoses (%)				
			Any	Social	Specific	Separation	Generalised
Bayer et al., (2006), 4-year-old Australian community sample, <i>N</i> = 112	2.1 (0.5)	-	-	-	-	-	-
Andrijic et al., (2013), 1.5-7 year-old Australian clinical sample, <i>N</i> = 30	2.6 (0.6)	-	50% ADIS-P-IV	27% ADIS-P-IV	31% ADIS-P-IV	31% ADIS-P-IV	27% ADIS-P-IV
SDQ normative data (2007), 5-10 year-old British normative sample, <i>N</i> = 5855	-	1.9 (2.0)	-	-	-	-	-
SDQ normative data (2007), 4-7 year-old American normative sample, <i>N</i> = 2779	-	1.5 (1.7)	-	-	-	-	-
Rapee et al., (2005), 3-5 year-old	-	-	90.0%	65%	43%	30%	-

Australian inhibited sample, $N = 146$			ADIS-P-IV	ADIS-P-IV	ADIS-P-IV	ADIS-P-IV	
Wichstrom et al., (2012), 4-year-old							
Norwegian screen-stratified population sample, $N = 995$	-	-	1.5% PAPA	0.5% PAPA	0.7% PAPA	0.3% PAPA	-
Bufferd et al., (2012), 6-year-old			15.6%				1.5%
American community sample, $N = 462$	-	-	PAPA	2.2% PAPA	8.2% PAPA	4.8% PAPA	PAPA
Egger and Angold (2006), 2-5 year-old							6.5%
American community sample, $N = 307$	-	-	9.4% PAPA	2.1% PAPA	2.3% PAPA	2.4% PAPA	PAPA
Lavigne et al., (2009), 4-year-old						0.6%	
American community sample, $N = 796$	-	-	-	-	-	DISC-YC	-
Ford et al., (2003), 5-7 year-old			3.19%	0.33%	1.17%	1.48%	0.16%
British community sample, $N = 2,964$	-	-	DAWBA	DAWBA	DAWBA	DAWBA	DAWBA

Note. CMFWQ: Children's Moods, Fear and Worries Questionnaire; SDQ: Strengths and Difficulties Questionnaire; ADIS-P-IV: Anxiety Disorders Interview Schedule for DSM-IV: Parent Version; PAPA: Preschool Age Psychiatric Assessment; DISC-YC: Diagnostic Interview Schedule for Children - Parent Scale -Young Child Version; DAWBA: Development and Wellbeing Assessment

^aScale range = 1.00 – 5.00. ^bScale range = 0 - 2.00

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Table 4

Inhibited Children With Versus Without Anxiety Disorders (ADIS-P-IV) on the Children's Moods, Fears and Worries Questionnaire (CMFWQ): T-tests and Effect Sizes (N=480)

Type of ADIS-P-IV disorder	CMFWQ symptoms								
	Group with anxiety disorder			Group without anxiety disorder			<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>			
anxiety disorder	2.58	.55	228	2.04	.41	252	12.15	<.001	1.10
social phobia	2.64	.56	146	2.15	.47	334	10.10	<.001	0.97
specific phobia	2.53	.58	107	2.23	.52	373	5.08	<.001	0.54
separation	2.84	.51	85	2.18	.48	395	11.34	<.001	1.33
generalised	2.74	.50	64	2.23	.52	416	7.29	<.001	0.99

Note. Cohen's *d* effect size

Table 5

Consistency of Children's Moods, Fears and Worries Questionnaire (CMFWQ) Clinical Range for Internalising Problems with Anxiety Diagnoses (ADIS-P-IV) in an Inhibited Sample (N = 480)

ADIS-P-IV	CMFWQ		OR	χ^2	p	SP	SE
	clinical cut-point						
	> 2.87	≤ 2.87					
	% (n)	% (n)					
Any anxiety disorder	90 (62)	40 (166)	13.07	57.97	<.001	.97	.27
social phobia	65 (45)	25 (101)	5.76	46.11	<.001	.93	.31
specific phobia	45 (31)	19 (76)	3.60	23.84	<.001	.90	.29
separation	54 (37)	12 (48)	8.74	71.33	<.001	.92	.44
generalised	36 (25)	10 (39)	5.42	36.57	<.001	.89	.39
multiple types	7 (5)	1 (4)	7.95	12.64	<.001	.86	.56

Note. SP: Specificity (proportion of children without a ADIS-P-IV anxiety disorder that scored below the CMFWQ's internalising cut-point, value for an accurate screen $\geq .80$); SE: Sensitivity (proportion of children with a ADIS-P-IV anxiety disorder that scored above the CMFWQ's internalising cut-point, value for an accurate screen $\geq .70$); Multiple types: four anxiety subtypes co-occurring for a child.

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