

Revised Children's Anxiety and Depression Scale (RCADS): Psychometric Properties in a Clinical Sample in the United Kingdom

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ABSTRACT

Background: Routine Outcome monitoring has become a principle element in the transformation of mental health services for children and young people in the UK and promoted by the CYP Improving Access to Psychological Therapies (IAPT) program. Collecting data on the outcome of therapeutic interventions is a required element of the mental health data set within NHS settings. The Revised Child's Anxiety and Depression Scale (RCADS) has been identified as a useful tool based on the normative studies of US populations. There has, however, been no evaluation of RCADS for a UK population. Because of the data available, the current study provides an initial assessment of the validity and reliability of the RCADS in a United Kingdom (UK) clinical sample. Children had been referred to a community mental health and emotional wellbeing service for children and young people presenting with mild to moderate difficulties, in the East of England.

Methods: A sample of 1920 CYP (equivalent numbers of boys and girls, aged 7.9 to 18 years), completed the RCADS as part of routine assessment. Parents also completed the RCADS-P for comparison. Tests of normality, internal consistency, factor analysis and correlation were conducted on child and parent raw scores.

Results: The current study identified the psychometric properties of RCADS for a UK clinical sample. RCADS showed a simple structure where all six variables loaded highly on the one factor of Separation Anxiety. RCADS showed good internal consistency with positive and highly significant correlations between subscales as well as between child and parents reports.

Conclusions: All six subscales were found to be necessary part of RCADS. Indications are that RCADS shows promising clinical utility as a valid and reliable measure for assessing children with Anxiety and Depression in the UK. Future research needs to include a confirmatory factor analysis and assessment of a reliable clinical cut off-score for a UK clinical population.

Keywords: Revised Child Anxiety and Depression Scale (RCADS); Child anxiety; Child depression; Child outcome measures; Routine outcome monitoring; Children and Young People's Increasing Access to Psychological Therapies (CYP IAPT).

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INTRODUCTION

The increasing commitment of health services both within and outside the National Health Service (NHS) to embrace transformation in the delivery of mental health services for young people is backed by the shared principles of the Government's Future in Mind project and Children and Young People's Increasing Access to Psychological Therapies (CYP IAPT). The pillars of this approach are to reduce the stigma of mental health difficulties and increase access to evidence based psychological therapies delivered in an environment of collaborative practice with service users. Services are then able to account for the interventions offered and demonstrate effectiveness through a shared understanding and commitment to Routine Outcome Measures (ROMs). Repeated use of regular outcome monitoring has been shown to improve the effectiveness of intervention and ensure focus on therapeutic work towards measurable goals [1-3]. From extensive work by the Child and Adolescent Mental Health Services (CAMHS) Child Outcome Research Consortium (CORC), CYP IAPT has proposed a number of routine measures which form part of the National Health minimum data set to ensure services show accountability for their services. Given the prevalence of anxiety (3.3%) and depression (0.9%) in children and young people in the UK, effective assessment and monitoring of these presenting problems is essential if services are to prove the effectiveness of service delivery and attract further funding in a culture of austerity. This embedding of ROMs in clinical activity in particular feeding back the results of the questionnaire can increase discussion and understanding around the presenting problem, promoting the therapeutic relationship with CYP and their family [4].

The RCADS is a 47-item youth self-report questionnaire with scales corresponding to the Diagnostic and Statistical Manual of Mental Disorders [5] and intended for children 8 and above. Specifically, it incorporates the subscales of Separation Anxiety (SA), Social Phobia (SP), Generalized Anxiety Disorder (GAD), Panic Disorder (PD), Obsessive Compulsive Disorder (OCD), and Major Depressive Disorder (MDD). It also provides an overarching anxiety scale which is comprised of the total of the five anxiety subscales, and a total internalizing scale which includes the subscale for depressive symptoms. In addition, a parent version of the scale is available and scored similarly. Normative scores were developed by Chorpita and colleagues [6] looking at a school-based sample of 1641 children and adolescents. Their study showed that the RCADS anxiety subscales demonstrated a moderate to high correlation with other measures of anxiety including the Revised Children's Manifest Anxiety Scale (RCMAS) [7] where correlations range from 0.49 to 0.68 and the Spence Children's Anxiety Scale (SCAS) [8] where the range is from 0.50 to 0.61 [6]. Similarly, the depression subscale has since been shown to correlate significantly with the Children's Depression Inventory (CDI) [9] where the correlation was reported to be 0.80 [10]. The internal consistency of the RCADS subscales is high, with the lowest Cronbach alpha score reported as 0.78 for separation anxiety [11].

Subsequent studies have demonstrated that the RCADS is a reliable and valid measure across general population and school based samples in Australia, the Netherlands, Denmark, and the USA [6,10,12-15], as well as in clinical and school-based samples in Hawaii [11,6,12]. Findings also demonstrate that the RCADS may have value as both a screening measure, and as a tool to detect change over time [16]. These findings, along with the fact that this is the only measure of anxiety and depression in children and young people that are freely available in a number of languages [17] have contributed to the measures' popularity. Since 2012, the questionnaire has become routinely used as a pre- and post-intervention measure and the subscales used for session-by-session monitoring where clinically useful, in line with CYP IAPT recommendations [4]. However, despite its widespread use within the UK, there have to date been no studies to assess the validity and reliability of the RCADS within general or clinical populations of the UK. Indeed, clinical norms for this measure were obtained in a Hawaiian sample where the major ethnicities reported differ considerably from that which might be typical in the UK [12], an argument which may be levelled at all other investigations into the validity and reliability of this measure. This may be a crucial oversight given that there is some evidence to suggest that the original factors structure of the RCADS may not be replicable across different samples [16], with some research suggesting little distinction between different anxiety disorders in pre-adolescent samples [18,19].

In light of the foregoing, this study aims to address this omission by assessing the validity and reliability of the RCADS within a UK based clinical sample. This current study utilized RCADS data collected by a community mental health and emotional wellbeing service, as part of routine outcome monitoring. The service offers front line psychological brief interventions for children presenting with mild to moderate mental health problems (previously known as tier two) in the East of England.

The East of England, like other regions of the UK, does present variations in terms of mental health difficulties when considered as a national whole. Based on data from the Office of National Statistics, 2014 (the most current at the time of the sample collection), the region had a lower incidence of hospital admissions for mental health conditions and self-harm. The county also had lower rates of eating disorders and conduct disorder but higher reports of low life-satisfaction among 5 to 16-year olds. These variations should be considered when reviewing the results of this study.

METHOD

Research design and ethics

The current study analyzed the age, gender, presenting problems, and co-morbid symptoms of service users as part of routine clinical practice within a community based emotional wellbeing service. Tests of normality, internal consistency, and exploratory factor analysis were conducted on child RCADS raw scores. Convergent validity correlation was used to compare child and parent RCADS Raw Scores. University Research Ethics Committee (UREC) approval was granted for analysis of

an anonymous archival data set of RCADS scores, child and parent forms. Active informed consent was required of the service Clinical Director and Service User consent was completed prior to assessment. Information was provided on the use of anonymized data collected, which formed part of the CYP IAPT program and service evaluation. Outcome measures were scored and stored in a secure encrypted database at the emotional wellbeing service and at the University.

Participants

The initial data set of RCADS (child/parent forms) covered the period January 2012-February 2017. Children and adolescents

had been referred to a Child and Adolescent Mental Health (CAMHS) Emotional Wellbeing Service, UK. Typical interventions are short term group and individual work within the Tier 2 level of community CAMHS services, now referred to as the Thrive Quadrant of Getting Help [20]. Children were referred to the service by parents, schools, GPs, other professionals or self-referred for a range of presenting difficulties (Table 1). Data included only full sets of child raw score data resulting in a sample size of n=1920 (85%) for child and parent scores from a corpus population of n=2256 children referred to the service during the same time period.

Total sample	Average Age and SD	Gender
Anxiety n=692 (37.1%)	Anxiety=11.10 years (SD=2.61)	Anxiety (424 f vs. 266 m)
Grief n=483 (25.9%)	Grief=12 years (SD=2.72)	Grief (263 f vs. 220 m)
Behavior n=150 (8.1%)	Behavior=11.05 years (SD=2.33)	Depression (110 f vs. 39 m)
Depression n=149 (8%)	Depression=14 years (SD=2.05)	Behavior (97 m vs. 54 f)
ASD n=55 (2.9%)		
SE n=50 (2.7%)		
Co-morbidity	Co-morbidity	Co-morbidity
ASD/Anxiety n=47 (2.5%)	ASD/Anxiety=11.2 years (SD=2.49)	ASD/Anxiety (32 f vs. 15 m).
Anxiety/Dep n=17 (0.9%)	Anxiety/Dep=13.1 (SD=2.38)	Anxiety/Dep. (13 f vs. 4 m)
S-harm/Dep n=11 (0.6%)	S-harm/Dep.=14.1 (SD=1.14)	S-harm/Dep. (10 f vs. 0 m)
Anxiety/Grief n=10 (0.5%)	Anxiety/Grief=12.9 (SD=2.85)	Anxiety/Grief (8 f vs. 2 m)

Table 1: Presenting problems by age and gender.

Age and gender

The average age of participants was 12 years 2 months. The age of participants ranged from 7 year 9 months to 18 years (m=12.16, SD=2.63). Age was normally distributed, with skewedness of 0.064 (SE=0.056) and kurtosis of 1.111 (SE=0.112). There was an even spread in the number of participants from 8 to 15 years with around 200 (10%) in each chronological year. The RCAD scoring system is based on US school grade rather than a specific age cut-off. In the UK recommendations, RCADS are for use with children 8-18 years and the RCADS-P can also be completed by the parent or career of young people of the same age groups [4].

There was n=1073 (56%) girls, n=842 (44%) boys and n=5 (0.3%) missing gender data leaving n=1915. Further, across the same age range, girls were slightly older on average with the mean age for girls, m=12.58 (SD=2.61) and the boys mean age was nearly one-year younger m=11.63 (SD=2.57).

Presenting problems

Forty-one problems were identified at referral. Twenty symptoms were recorded as co-morbid. The most frequently occurring presenting symptom was 'Anxiety' n=692 accounting for over a third of participants (37.1%), followed by 'Bereavement' n=483 accounting for a quarter of the sample (25.9%). Problem Behaviour (n=150, 8.1%) and Depression (n=149, 8%) were each recorded in nearly a tenth of participants. Autism Spectrum Disorder (ASD) accounted for n=55 (2.9%) and social emotional difficulties (SE) equaled n=50 (2.7%). Although there were a large number of co-morbid conditions listed in referral (n=20), the frequency of co-morbid symptoms was low. The most frequently occurring presenting symptoms for co-morbid conditions were: ASD/Anxiety (n=47, 2.5%); Anxiety/Depression (n=17, 0.9%); Self Harm/Depression (n=11, 0.6%) and Anxiety/Bereavement (n=10, 0.5%). All other co-morbid symptoms were in single figures.

Presenting problems by age

The mean ages for the main presenting problems were as follows: Anxiety=11.10 years (SD=2.61); Bereavement=12 years

(SD=2.72); Behaviour=11.05 years (SD=2.33); and Depression=14 years (SD=2.05). Young people with depression on average were in middle adolescence. Average ages for the main co-morbid symptom were: ASD/Anxiety=11.2 years (SD=2.49); Anxiety/Depression=13.1 (SD=2.38); SH/Depression=14.1 (SD=1.14); and Anxiety/Bereavement=12.9 (SD=2.85). Perhaps not surprisingly, given the extent of depression in middle adolescence, co-morbidity involving depression also occurred at middle adolescence.

Presenting problems by gender

More girls were recorded as presenting with Anxiety (424 f vs. 266 m), Bereavement (263 f vs. 0.220 m) and particularly Depression (110 f vs. 0.39 m) than boys. In contrast, almost double the number of boys presented with behavioural difficulties than girls (97 m vs. 0.54 f). In terms of co-morbid symptoms double the number of boys presented with ASD/Anxiety (32 f vs. 0.15 m). More girls, however, presented with the co-morbid symptoms of Anxiety/Depression (13 f vs. 4 m); Anxiety/Grief (8 f vs. 0.2 m) and most striking with Self Harm/Depression (10 f vs. 0.0 m). In short, there was a clear gender difference in girls being referred for internalized symptoms compared with boys externalizing symptoms.

Measures

The Revised Child Anxiety and Depression Scale is a 47-item youth self-report questionnaire which incorporates subscales including Separation Anxiety Disorder (SAD), social phobia SP, Generalised Anxiety Disorder (GAD), Panic Disorder (PD), Obsessive Compulsive Disorder (OCD) and Major Depressive Disorder (MDD). It also provides a total anxiety scale which is comprised of a total of the five anxiety subscales and a total internalizing scale which also includes the 6th subscale for depressive symptoms. A parent version of the scale is also available and scored similarly [6].

The RCADS requires respondents to rate how often each item applies to them. Items are scored 0–3 corresponding to “never,” “sometimes,” “often,” and “always.” Several investigations have demonstrated support for the RCADS in non-referred samples of youth [6,10].

Procedure

The data collected was part of the normal routine assessment procedure in the emotional wellbeing service. This assessment includes collecting, with consent, age appropriate outcome monitoring scales which are used with the family to help identify a piece of targeted work within the service and facilitate monitoring the progress and outcome of the intervention. Both young people above the age of 8 (in the academic 4th school year) and accompanying parent/carer completed RCADS.

RCADS analysis

Tests of normality: RCADS (Child) age and gender raw scores (Total Anxiety Scale and Total Internalising Scale and each

subscale) were assessed using Kolmogorov-Smirnov and Shapiro-Wilk tests of normality to assess normal distribution and skewedness of participant age and gender. The Total Anxiety Scale consists of 5 subscales and the Total Internalising Scale consists of all six subscales. The non-normal distributed nature of RCADS (Child) raw scores were then confirmed by tests of skewedness and kurtosis for each subscale. All subscale means and standard deviations are presented in tabular form for comparison.

Measure of internal consistency: As in prior studies Cronbach alpha was used as a measure of reliability and internal consistency for each subscale to see how closely related the RCADS factors were as a group. This was followed by a factor analysis assessment.

Factor analysis: An Exploratory Factor Analysis (EFA) was conducted to uncover the underlying structure of the set of six variables, including principal component extraction and varimax-Bartlett's Test of Sphericity (BTS) and Kaiser Meyer Olkin (KMO) was used to measure sampling adequacy. Where the KMO index is high (≧1), the Principal Components Analysis (PCA) can act efficiently; if KMO is low (≦0), the PCA is not relevant. A Scree plot is provided to visually show the pattern of the six RCADS variables/subscales. To investigate the impact of gender and age on RCADS, Univariate Analysis of Variance (ANOVA) was carried out on Child Total Anxiety and Total Internalising Scales, and on individual subscales. Partial eta-squared was also conducted to assess effect size for scales and subscales, where .01 is a small effect size, .06 is medium and 0.14 is large effect size.

RCADS convergent validity correlation: To compare child and parent RCAD raw scores convergent validity correlation was conducted on RCADS Total Internalising scores, RCADS Anxiety Total scores and all subscales.

RESULTS

Tests of normality

Child raw scores for Total Anxiety Scale (5 subscales) and Total Internalising RCADS (all six subscales) as well as each child subscale were not normally distributed. This was evidence from the significant results for Kolmogorov-Smirnov and Shapiro-Wilk tests of normality. This pattern was repeated in Parents' Total Anxiety and Total Internalising RCADS and subscales (Table 2).

The non-normal distributed nature of RCADS (Child) raw scores were confirmed by tests of skewedness and Kurtosis for each subscale (Table 3).

Subscales	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Separation Anxiety (SAD)	0.115	1917	0.000	0.802	1917	0.000
Generalized Anxiety (GAD)	0.084	1917	0.000	0.863	1917	0.000
Panic Disorder (PD)	0.111	1917	0.000	0.883	1917	0.000
School Phobia (SP)	0.060	1917	0.000	0.962	1917	0.000
Obsessions/Compulsions Disorder (OCD)	0.121	1917	0.000	0.770	1917	0.000
Major Depressive Disorder (MDD)	0.086	1917	0.000	0.905	1917	0.000

Note: a. Lilliefors Significance Correction

Table 2: RCADS (Child) tests of normality.

Subscale	Range	Mean (SD)	Skewedness (SE)	Kurtosis (SE)
Separation Anxiety (SAD)	0-77	6.84 (5.88)	3.756 (0.056)	33.036 (0.112)
Generalized Anxiety (GAD)	0-64	8.04 (5.16)	2.480 (0.056)	18.150 (0.112)
Panic Disorder (PD)	0-68	8.17 (6.77)	1.904 (0.056)	9.527 (0.112)
School Phobia (SP)	0-66	12.62 (7.21)	0.800 (0.056)	3.116 (0.112)
Obsessions/Compulsions Disorder (OCD)	0-65	6.03 (5.21)	3.916 (0.056)	32.782 (0.112)
Major Depressive Disorder (MDD)	0-68	11.05 (6.76)	1.682 (0.056)	8.641 (SE=0.112)

Table 3: RCADS (Child) raw scores-tests of skewedness and Kurtosis.

Internal measure of consistency

Cronbach alpha is often used as a measure of reliability in generalisability studies. Cronbach's Alpha was 0.913 indicating a high level of internal consistency for RCADS (.8 would have been respectable, .9 is excellent). Cronbach's Alpha for individual subscales were as follows: SAD=0.712; GAD=0.828; PD=0.801; SP=0.737; OCD=0.739; and MDD=0.775. All the subscales performed well with GAD and PD performing really well meaning they are highly related to the RCADS Total Internalising Scale. As removal of any one subscale did not result in a lower Cronbach's Alpha there is no need to remove any subscale from RCADS. Mean scores and standard deviations for each subscale are reported in the table below.

Factor analysis

An Exploratory Factor Analysis (EFA) was conducted to uncover the underlying structure of the set of six variables. The Kaiser Meyer Olkin (KMO) measure of sampling adequacy was over .6 at .912 indicating the sample was sufficient for analysis. Bartlett's Test of Sphericity (BTS) is highly significant χ^2 (15, N=1920)=7633, $p<0.001$ indicating the variables were not independent. Further, the SCREE plot showed a clear dip from the first variable to the SCREE of the other 5 variables, the rubbish end of the variance spectrum. From the number of dots at the top of the plot, it appears there is only a one factor solution (Figure 1).

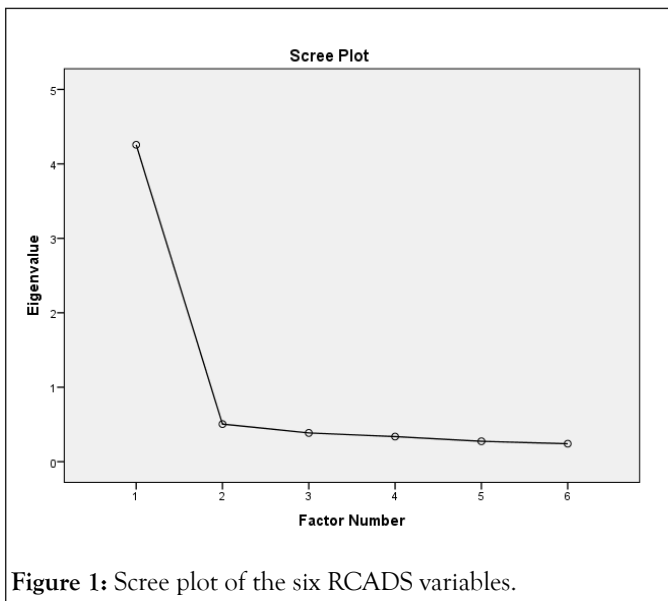


Figure 1: Scree plot of the six RCADS variables.

In the factor correlation matrix all 6 values are above 2. This enables the assumption to be made that the six factors correlate highly together: SAD (0.755); GAD (0.878); PD (0.843); SP (0.772); OCD (0.783); MDD (0.810). In short,

this is a simple structure where all six variable load highly on factor 1 (SAD).

Gender differences

To investigate the impact of gender on RCADS, univariate analysis was carried out on Child Total Anxiety and Total Internalising Scales. A significant difference was found in gender on both Total Anxiety, $F(1, 1913)=128.9, p<0.001, \eta^2=0.063$; $M=34.75$ m (SD=19.97) vs. $M=45.36$ f (SD=20.61) and Total Internalising Scales $F(1, 1913)=125.0, p<0.001, \eta^2=0.061$; $M=44.31$ m (SD=24.10) vs. $M=57.12$ f (SD=25.57). A large effect size was found with girls presenting significantly higher symptom levels than boys.

To assess the influence of gender on each subscale Univariate Analysis of Variance (ANOVA) was also performed. Significant gender differences were found across all subscales with girls scoring higher than boys (Table 4). Table 5 compares the means and standard deviations for gender for each of the subscales. Using partial eta-squared in factorial Analysis of Variance (ANOVA), where .01 is a small effect size, .06 is medium and 0.14 is large, small effect sizes were found for SAD, MDD and OCD. Close to medium effect sizes were found for PD and SP, and less so GAD. Girls therefore presented with higher symptomology in all subscales compared with boys, particularly PD and SP.

Subscale	Analysis of variance (ANOVA)	Partial eta-squared
Separation Anxiety (SAD)	$F(1, 1913)=25.754, p<0.001^*$	$\eta^2=0.013$
Generalized Anxiety (GAD)	$F(1, 1913)=61.181, p<0.001^*$	$\eta^2=0.031$
Panic Disorder (PD)	$F(1, 1913)=101.185, p<0.001^*$	$\eta^2=0.050$
School Phobia (SP)	$F(1, 1913)=118.119, p<0.001^*$	$\eta^2=0.058$
Obsessions/Compulsions Disorder (OCD)	$F(1, 1913)=18.336, p<0.001^*$	$\eta^2=0.009$
Major Depressive Disorder (MDD)	$F(1, 1910)=50.417, p<0.001^*$	$\eta^2=0.026$

Note: *significant at $p<0.001$ (2-tailed)

Table 4: Gender differences in individual subscales.

Gender/ Scale	Separation Anxiety (SAD)		Generalized Anxiety (GAD)		Panic Disorder(PD)		School Phobia(SP)		Obsessions/Compulsions Disorder (OCD)		Major Depressive Disorder (MDD)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Girls	7.38	-5.44	8.81	-5.03	9.47	-6.7	14.14	-7.04	6.43	-5.26	12.02	-6.98
Boys	6.06	-5.84	7.01	-4.96	6.46	-6.17	9.84	-6.26	5.46	-4.8	9.84	-6.26

Table 5: RCADS subscale raw means and standard deviations by gender.

Age differences

Analysis of Variance (ANOVA) was also used to assess the influence of age on RCADS subscales. Univariate Analysis of Variance (ANOVA) revealed significant differences in age across 5 of the 6 subscales (Table 6). The effect size as measured by partial eta-squared revealed a medium effect size for age in SP

and MDD; and small effect sizes for SAD, GAD, and PD. No age difference was found in the OCD subscale. Post hoc analysis with Tukey's HSD revealed that for the SP and PD Scales, 8 and 9 year olds scored significantly lower than 14 to 16 year olds (<0.05) showing adolescents as more socially anxious.

Subscale	Analysis of variance (ANOVA)	Partial eta-squared
Separation Anxiety (SAD)	F(11, 1908)=3.926, p<0.001**	$\eta^2=0.022$
Generalized Anxiety (GAD)	F(1, 1908)=2.294, p<0.01*	$\eta^2=0.0$
Panic Disorder (PD)	F(1, 1908)=6.517, p<0.001**	$\eta^2=0.036$
School Phobia (SP)	F(1, 1908)=12.306, p<0.001**	$\eta^2=0.066$
Obsessions/Compulsions Disorder (OCD)	F(1, 1905)=1.095, p=0.361	
Major Depressive Disorder (MDD)	F(1, 1910)=12.450, p<0.001**	$\eta^2=0.06$

Note: *Significant at p<0.01, **significant at p<0.001 (2-tailed)

Table 6: Age differences in individual subscales.

RCADS convergent validity correlation

All RCADS subscales correlated to a highly significantly level (p<0.01) in a positive direction with convergent child and parent scores. As scores increased on one subscale, they also increased in the others. Similarly, all subscales positively and highly significantly correlated with the RCADS Total Internalising Scores and RCADS Anxiety Total for child and parent scores at p<0.01 level (2 tailed). While significance was high, the size of the correlations was small to modest, as it ranges from 0.24 to 0.42. Indicating the association between child and parent scores was not large in magnitude.

Comparison: Child and parental raw scores

Although parent raw scores were wider ranging and slightly higher on average than child self-reports in RCADS Total Internalizing and Anxiety Scales as well as in all subscales, differences were non-significant. Indeed, correlations between child and parent total and raw scores for individual subtests were all in a positive direction and highly significant. The strongest correlations between child and adult ratings were for Social Phobia, Separation Anxiety and Depression (Table 7).

Subscale	Parent		Child		
	Range	Mean (SD)	Range	Mean (SD)	Correlation (r)
Separation Anxiety (SAD)	0-115	7.13 (6.78)	0-77	6.84 (5.88)	0.398*
Generalized Anxiety (GAD)	0-87	7.96 (5.79)	0-64	8.04 (5.16)	0.278*
Panic Disorder (PD)	0-155	6.45 (7.77)	0-68	8.17 (6.77)	0.347*
School Phobia (SP)	0-95	13.56 (7.27)	0-66	12.62 (7.21)	0.418*
Obsessions/Compulsions Disorder (OCD)	0-102	4.39 (5.81)	0-65	6.03 (5.21)	0.245*
Major Depressive Disorder (MDD)	0-124	10.60 (7.19)	0-68	11.05 (6.76)	0.394*

Note: *Significant at p<0.001 (2-tailed)

Table 7: Comparison: Child and parental raw scores.

Child and Parent RCADS Total Internalising Scales also positively correlated and were highly significant $r(1920)=0.57$, $p<0.001$). The same results, not surprisingly, were found with Child and Parent Total Anxiety Scale $r(1920)=0.57$, $p<0.001$).

DISCUSSION

In this well-balanced sample for gender and across a wide age range, children at referral presented with a diverse range of mental health difficulties. Half presented co-morbid symptoms. Most children and adolescents presented with anxiety and bereavement reactions. Age wise, those in early adolescence presented with higher levels of anxiety and those in mid adolescence showed higher levels of depression. In terms of gender, girls presented with higher levels of anxiety and depression than boys.

Overall, the sample showed a non-normal distribution of raw scores. This may reflect the most common referral problems to the service. Whilst the high levels of anxiety symptoms is in line with National statistics for referrals to community based CAMHS [21], the emotional wellbeing service offered a specialist service supporting CYP and families experiencing bereavement, which would account for the high level of referrals for bereavement related difficulties. Bereavement is often characterised by higher levels of Separation Anxiety Disorder (SAD) and General Anxiety Disorder (GAD).

Results show all six subscales loaded highly on SAD, indicating a simple structure underlying RCADS. The findings may indicate a unidimensionality to RCADS for a UK population as the first factor extracted (SAD) captured most of the variance. However, while such a result is suggestive of unidimensionality, the nature of analysis cannot demonstrate it and, therefore, more research is needed. Importantly, subscales were highly correlated with each other and therefore not independent of each other. RCADS was found to show high internal consistency for all the subscales and therefore all subscales are an important part of the measure and need to be included in administration and analysis. It is worth noting that within this, GAD and PD performed particularly well in relation to the RCADS Total Internalizing Scale.

Gender wise, girls presented with higher total anxiety and internalizing symptom levels as well as across all subscales, a similar finding in a school-based population, except for OCD where boys score higher [6]. Study of a clinical sample at a university clinic showed girls scored higher on GAD, PD, and SP [11]. For age, a medium effect size was found for Social Phobia and Major Depression whereas a small effect size was found for Separation Anxiety Disorder, Generalized Anxiety Disorder, and Panic Disorder. No age difference was found in the Obsessive-Compulsive subscale. Across the subscales, older adolescents tended to present with higher symptoms especially on Social Phobia and Panic Disorder. These results are in line with the national trends reported by [21] in the UK which highlights the increase in prevalence of anxiety, and emotional disorders, with age. In the study, an age effect was also found for higher levels of anxiety (SAD), for children aged 8 to 10 years,

and children aged 10-12 showed higher OCD [11]. In short, the current study's findings need replication but may indicate that RCADS can differentiate age and gender differences in a UK sample and may be a promising measure for identifying anxiety following bereavement, given the high percentage of cases where this was identified in the sample studied.

In terms of presenting difficulties only a small proportion of the sample presented with depression (8%) and a very small proportion presented with depression as part of co-morbid symptoms (0.6-0.9%). Although those presenting with depression was small the sample was still greater than the school-based study (4 which noted less reliability when measuring depression in boys. This study demonstrates a highly significant correlation ($p<0.01$) between depression scores on the RCADS for children and adolescents who were referred for depression indicating RCADS is a promising measure of identifying depression in children in a UK sample. The high proportion of children presenting with bereavement may suggest symptoms similar to low mood inadvertently increasing the sample for which depression was significant. In this clinical sample the RCADS significantly identified differing depression levels across age as well as differences between the genders, that is, higher levels of depression in girls. Parent and child scores indicated a significant correlation and it would appear, that the depression scale in RCADS is a core part of the scale and has utility in identifying both gender and age differences. Finally, parent and child scores were found to highly correlate on Total Anxiety and Total Internalizing scores and for the individual subscales. The strongest correlations between parent and child scores were for Social Phobia, Separation Anxiety and Depression. Interestingly, parents scores tended to be higher across the subscales, however, not to a significant degree. Also found positive and significant correlations between parent and child scores on each of the subscales [11]. Indications are that in the UK clinical sample parental and child reports are valid and reliable.

Value to clinical practice

The results indicate that RCADS in a UK sample, shows promising clinical utility for children referred to psychological and wellbeing services for a wide range of presenting problems, including bereavement, and co-morbid symptoms. Specifically, RCADS appears to be a valid and reliable measure of anxiety and depression, with high internal consistency similar to [11], covering a wide age range from 8 to 18 years. This is in line with current guidance on administration. In contrast to some other studies [19], RCADS had the sensitivity to identify differing levels of anxiety and depression across adolescence and in relation to Social Phobia and Major Depression across the age range.

This report would suggest the RCADS is of utility in assessing both girls and boys, whether presenting internalizing or externalizing behaviour, highlighting differential levels of anxiety and depression in males and females. In support of prior studies [16], RCADS is a useful screening tool for children and adolescents who are presenting with symptoms of anxiety and depression in a community outpatient setting. Parental and child completion of RCADS in a UK sample appears reliable; however, clinicians can expect small differences in scoring between parents and children. Clinical focus should consider the correlations and patterns of scores shown across both questionnaires and clinicians may wish to further explore the scores to understand the significance of any differences between parents and their child.

The use of the subscales within clinical practice should be carefully considered. While the RCADS shows good reliability and validity for measuring child anxiety and depression all of the 6 subscales appear to be important in the validity of the questionnaire. While the subscales were designed to reflect the DSM IV criteria for comparison and diagnosis at symptom level [6] clinical application may best consider the significance of total scores for severity of mental health difficulties, the use of individual subscales may be more appropriate for collaboratively identifying the most suitable questions to monitor client progress to clear clinical goals, rather than clinical diagnosis of the presenting problem.

The factorial analysis loading on to the Separation Anxiety Subscale (SAD) is interesting and closer consideration of the questions within this subscale may be important. Clinical reports from CYP IAPT trainees have suggested regular high scores for this subscale irrespective of the presenting problem (D. Trickey personal communication 15th April 2021). Interpretation of this subscale, as a distinct recognition of any underlying anxiety should be considered carefully in line with additional clinical information when treatment planning.

Limitations

The sample included only full participant sets of data and as such it is unknown to what extent omitted data would have influenced the results. The sample size is large and risks of finding significance where none exists is therefore reduced, although not eliminated. There were slightly more girls in the sample than boys, with girls being almost a year older, which may have skewed the results. Nevertheless, this does represent a real-world example of referral patterns to CAMHS Emotional Wellbeing services. The sample included only those children referred into the service owing to symptoms of mental health difficulties. It is therefore, unknown how non-symptomatic children would have responded. Consequently, caution is needed in generalizing the results to non-clinical populations. As the Organisation did not provide data on socio-economic status and returns for ethnicity were limited, these factors were excluded from the analysis. Further, no other standardized measures were utilized and therefore no comparative standardized measure data were available. Item level data was not available to conduct a confirmatory factor analysis and no longitudinal data was available for a test-re-test analysis and

assessment of reproducibility. The latter being a lack of empirical support for reliability in terms of stability.

CONCLUSION

The current study sought to address the omission of validity and reliability of the RCADS for children and adolescents in the United Kingdom. Following analysis of a large clinical sample, indications are that RCADS is a valid and reliable measure for assessing anxiety and depression in the UK. Patterns of age and gender on RCADS were identified for use by practitioners and for comparison with future studies. In particular the data indicates higher scores and therefore greater experience of Social Phobia and Panic Disorder for young people aged 14-16 with girls scoring higher than boys on anxiety also for Social Phobia and Panic Disorder. All six subscales were found to be necessary part of RCADS. As only a single 'anxiety' factor was identified as underlying the factor structure of the instrument, further research is needed to clarify the individual reliability of the subscales in UK samples.

RECOMMENDATIONS FOR PRACTICE

Indications are, RCADS can be administered along-side other standardized measures to provide a comparative assessment of symptoms forming part of a collaborative formulation and subsequent treatment plan. This scale appears to provide a robust and clinically useful understanding of child and parent rated problems of anxiety, and to a lesser extent depression, when conducting a formal assessment of mental health needs.

RECOMMENDATIONS FOR FUTURE RESEARCH

Participants involved should be categorized by clinical diagnoses according to international accepted diagnostic criteria and based on structured diagnostic interview. As this study was conducted in only one region, there is a need for a UK wide sample. Data needs to be collected at the item level in order to conduct a Confirmatory Factor Analysis (CFA). Longitudinal data would enable a test-retest analysis assessment of reproducibility. Future analysis needs to include the participant factors of ethnicity and socio-economic status. Comparative standardized measures would give confidence in future findings. In order to standardize the measure for a UK population a comparative sample of non-symptomatic children would be required. In order to identify children with diagnostic clinically significant symptoms, a ROC analysis needs to be conducted to assess the validity and reliability of cut-off scores for a UK sample. However, outcome measures of this kind can be considered a therapeutic tool for discussion with clients rather than a definitive indicator of child mental health diagnosis.

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