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The Revised Child Anxiety and Depression Scale - Parent Version: Extended Applicability and Validity for Use with Younger Youth and Children with Histories of Early-Life Caregiver Neglect

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Abstract

The Revised Child Anxiety and Depression Scale - Parent Version (RCADS-P) is a widely used parent-report measure, initially developed to assess anxiety and depression in youth in grades 3–12 from school-based and clinic-referred settings. It is important however to be able to assess these problems in even younger children due to the need for earlier understanding, identification, intervention and prevention efforts of anxiety and depression in younger children, and continual monitoring of these problems across the youth life span. For the present study, we used a sample of 307 children and adolescents ages 3.0 to 17.5 years old (M=8.68, SE=4.10). For the first set of analyses, we divided the sample into Younger youth (kindergarten to grade 2; n=152) and Older youth (grade 3 to 12; n=155) to see whether each group independently met benchmarks for acceptable reliability and validity. Given the number of children who also develop anxiety and depression following early-life adversities and adverse care (such as caregiver neglect), we also divided our sample differently into a Post-Institutionalized group (i.e., previously institutionalized youth; n=100) and a Comparison group (i.e., youth without histories of early-life caregiver neglect; n=195) to examine whether each of these groups also met benchmarks for acceptable reliability and validity. Specifically, in each of these grade and experience groups, we examined the factor structure (including measurement invariance), internal consistency and convergent and discriminant validity of the RCADS-P anxiety and depression scales scores. Results demonstrated that younger youth RCADS-P reports were associated with acceptable reliability and validity estimates. Similar support for the RCADS-P scores was found for the Post-Institutionalized youth. The present study therefore extends needed support for the use of the RCADS-P to assess and monitor these two new and important youth groups.

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Keywords

Parent-report; Assessment; Anxiety; Depression; Youth; Psychometrics; Neglect

Anxiety and depression in youth

Anxiety and depression frequently occur early in life (Compas, 1997; Kashani & Orvaschel, 1990), with estimates indicating that 10 to 20% of children experience these problems at some point before becoming adults (Costello & Angold, 1995). This is concerning, particularly given the negative outcomes associated with these problems and the common finding that internalizing problems often go undetected (Muris & Meesters, 2002), particularly relative to other problems, such as disruptive behavior disorders. Anxiety and depression can also go undetected due to being mistaken for developmentally normative anxiety that is experienced even in a non-clinical population—such as mild to moderate fears related to strangers, separation, the dark, insects, etc—which typically peaks during the preschool period. Therefore, adequate detection of clinically significant anxiety and depression (i.e., problems associated with elevated distress and/or impairment) is an important issue. If left untreated, these conditions can lead to cascading negative effects later in life that include significantly increased risk for subsequent substance use (Kendall, Safford, Flannery-Schroeder, & Webb, 2004), academic under-achievement (Woodward & Fergusson, 2001) and overall functional impairment (Birmaher et al. 1996; Langley, Bergman, McCracken, & Piacentini, 2004).

To help address these concerns and to aid in better identification, several instruments have been developed to obtain reports from multiple informants to inform youth assessment. Among these measures is the Revised Child Anxiety and Depression Scale (RCADS), which includes both the child version (RCADS-C; Chorpita, Moffitt, & Gray, 2005; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000) and parent version (RCADS-P; Ebesutani et al., 2010, 2011). Notably, the RCADS has demonstrated good psychometric support for use with children and adolescents in grades 3–12 from school-based and clinic-referred settings. The RCADS has been noted to be associated with several key strengths over other measures including simultaneously assessing both anxiety and depression (given the close relationship and high comorbidity of these two problem areas), and being designed to better correspond to DSM nosology than measures developed earlier, such as the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978).

Assessment in Younger Children

Although relatively less is known about anxiety and depression in younger children (such as those in preschool to 2nd grade; Angold & Egger, 2004), measurements of internalizing symptoms for this age group is still important for a variety of reasons. First, it is through assessment of children of this young age group that researchers and clinicians can begin to understand the expression of anxiety and depressive symptoms in younger youth. There are currently very few agreed-upon criteria for defining and identifying psychiatric disorders in younger youth (Pine et al., 2002)—except perhaps for autism (Volkmar, Lord, & Bailey,

2004) and ADHD (Egger, Kondo, & Angold, 2006) for which generally well-accepted diagnostic criteria have been determined. It is therefore important for sound assessment instruments to be developed and made available to measure symptoms of anxiety and depression in younger youth to help researchers and clinicians in the field better understand the nature of these problems in young children. Although these problems are not yet well delineated in younger youth, it is commonly believed that psychiatric problems and disorders 'begin early in life, are chronic, and protracted,' as noted by constituents of NIMH (Insel & Fenton, 2005, p. 590). Consistent with this notion, Egger and Angold (2006) also recently found evidence for the presence of anxiety disorder-related problems in children as young as in preschool. Spence and colleagues (2001) also administered the Preschool Anxiety Scale to parents of preschool children and reports revealed an underlying factor structure that resembled the anxiety cluster related to the DSM-IV categories of separation anxiety, social phobia, obsessive-compulsive disorder, generalized anxiety disorder, and specific phobias. Further, using the Preschool Age Psychiatric Assessment diagnostic interview, researchers found that anxiety (Danzig et al., 2013) and irritability (Dougherty et al., 2013) of children 3 years old were significant and unique predictors of subsequent emotional and behavioral problems when the children became 6 years old. Having current assessment measures extend down to children of these young ages can therefore help the field of psychology better understand the underlying structure and developmental trajectories of these problems in youngsters.

Second, extension of assessment instruments to younger age groups can allow for earlier identification of problems (or emerging problems), and thus may lead to earlier opportunities for prevention efforts. For example, Rapee and colleagues (2005) recently tested a parent-based intervention program for preventing the development and exacerbation of anxiety disorders in preschool children elevated on behavioral inhibition and withdrawal behavior. This program was found to be effective and led to significantly fewer anxiety disorders in treated versus non-treated children. Since such programs depend on the ability to detect those youth who may be at risk for the development of internalizing disorders as soon as possible, early detection of anxiety related problems is an important issue.

Third, it is useful for both clinical and research purposes to have assessment measures that span the age range (e.g., from young childhood years to older adolescent years) as much as possible to allow for the ability to have continuous and/or periodic assessment and monitoring via the same standardized measurement approach across a child's development. For example, longitudinal study designs would greatly benefit from being able to use the same instrument across the years to monitor and assess changes in symptoms. Some tools exist that achieve this important feature of clinical assessment. For example, the Child Behavior Checklist is one such measure designed to assess youth from 1.5 years old through high school (Achenbach, & Rescorla, 2000; 2001). One key disadvantage of the CBCL and related set of ASEBA scales, however, is that they are proprietary measures that are expensive to obtain and timely to administer—which are often significant barriers in the implementation of instrument scales, especially when repeated observations are necessary. Given the data collection and psychometric investigation efforts needed, however, it is also difficult to develop reliable and psychometrically sound assessment instruments that span a wide age range and allow for consistent monitoring across development.

Youth with Histories of Early-Life Adversity

In addition to the importance of having instruments available to assess younger children throughout their developmental life span, it is also important to have instruments available to assess and monitor children who have been exposed to early caregiver neglect. Such early-life experiences include caregiver neglect, poverty, and abandonment, among other problems. These experiences have the ability to impact development given that they are often associated with prenatal environments of substance exposure (e.g., Singer, et al., 2004), malnourishment (van der Vegt et al., 2009), high maternal stress (and therefore prenatal exposure to high cortisol levels; Essex, Klein, Cho, & Kalin, 2002; Gunnar, Morison, Chisholm, & Schuder, 2001), and inadequate and deprived social-emotional experiences early in life (Chugani et al., 2001; Eluvathingal et al., 2006). For these reasons, early caregiver neglect have been found to be associated with an array of problems, not only related to internalizing problems (e.g., Casey, Galtt, et al., 2009; Goff et al., 2013; Zeanah et al., 2009), but also to physiology, neurobiology, and later cognitive performance (Champagne, 2010; van der Vegt et al., 2009). Early-life childhood adversities are also becoming increasingly more prevalent across the globe (Kessler et al., 2010) and are among the leading causes of mental disorders in adulthood (e.g., Cohen, Brown, & Smaile, 2001; Kessler, Davis, Kendler, 1997; Wark, Kruczek, & Boley 2003; Widom, 1999). In the current study, we included children and adolescents who experienced early institutional caregiving (e.g., orphanages). Because this group was subsequently adopted by families, the timing of adverse caregiving was known and targeted early exposures (in infancy and early childhood). It is thus of increasing importance to have available measurement tools that can assess for and identify relevant problems among these children as soon as possible as they grow and develop, particularly given the large variability in outcomes following exposure to early adversity.

Surprisingly, there remains a growing need for the development of psychometrically-sound and clinically-useful measures to assess youth throughout their child and adolescent development—including, but not limited to young children and children from early-life adversities that put them at risk for experiencing subsequent mental health and behavioral problems. Over the past decade, the RCADS-P instrument has become an increasingly widely used measure to assess youth anxiety and depression problems. For example, the RCADS-P is being used for direct clinic service as part of the Prevention and Early Intervention outcome measures system within the County of Los Angeles Department of Mental Health. The RCADS-P is also a primary measure in various research studies examining different aspects of child and adolescent anxiety and depression (e.g., Costa, Weems, & Pina, 2009; Ebesutani, Bernstein, Chorpita, & Weisz; Muris, Meesters, & Spinder, 2003; Weems, & Costa, 2005). It is worth noting however that the RCADS-P is a parent-report questionnaire of child symptoms. Other parent-based measurement types do exist, such as structured interviews conducted with parents. One such promising instrument is the Preschool Age Psychiatric Assessment (PAPA; Egger, & Angold, 2004), which is a parent-based interview for assessing psychiatric symptoms in preschool children ages 2 to 5 years. Structured interviews have several strengths, such as often being associated with strong reliability (e.g., Egger et al., 2006). However, structured interviews are also often

associated with a higher degree of administration burden, such as requiring more training and more time to administer (see Ebesutani et al., 2012). For these reasons, it is also important to have questionnaires available when assessing children.

It is also notable that a recent review was conducted by Wolpert and colleagues (2014) to compare to clinical utility between the following outcomes measures commonly used in clinical settings: the Strengths and Difficulties Questionnaire (SDQ), the (Child) Outcomes Rating Scale (C/ORS), the Goals Based Outcomes (GBOs), and the Revised Child Anxiety and Depression Scale (RCADS). The RCADS was found to be able to provide the greatest assessment specificity compared to other clinically-oriented measures due to its anxiety subtype subscales (Wolpert et al., 2014). Another study employed longitudinal confirmatory factor analysis and found support that the RCADS measures anxiety symptoms similarly across time, and thus changes in scores over time likely reflect true changes in anxiety levels (Mathyssek et al., 2013). The RCADS-P thus appears to be a clinically useful measure that could be further strengthened by extending its clinical applicability to other samples.

The Present Study

The present study therefore sought to further broaden the clinical and research applicability of the RCADS-P to other youth sample types not tested so far. In particular, we sought to test and extend the applicability of the RCADS-P down to children as young as in kindergarten and also to youth with histories of early-life caregiver neglect. We examined both early school-aged years and early life stress in this single study given the importance of assessing internalizing problems at early ages so that interventions can be implemented to prevent and minimize the development of subsequent emotional and behavioral problems. Although children in those younger years themselves would likely not be able to provide reliable and valid reports on their own emotional and behavioral problems, their parents are often central and important members of their environment. Parent thus often have ample opportunities to observe and understand their child's behaviors to be able to provide reliable and valid reports on their children's behavioral manifestations of anxiety and depression. We therefore hypothesized that parents of children in kindergarten to the 2nd grade would be able to provide reports that can meet benchmarks for acceptable reliability and validity. Similarly, we predicted that we would find similar supportive psychometric properties exhibited by the early-life adversity group (described further below).

Method

Participants

All youth in the present study were drawn from 307 children and adolescents in kindergarten through grade 12 whose caregivers completed the RCADS-P as part of a larger longitudinal study on emotional development. These youth were subdivided into the "Younger" (n=152) and "Older" (n=155) grade level groups, and also into "Post-Institutionalized" (n=100) and "Comparison" (n=195) experience groups (described below) for specific analyses. Following the procedures outlined in the original RCADS-P development paper (Ebesutani et al., 2011), we included participants with 90% or more completed items. This led to the inclusion of 307 participants. The amount of missing data were as follows: 261 youth (85.0%) had no

missing items; 32 youth (10.4%) had 1 missing item; 10 youth (3.3%) had 2 missing items; 2 youth (0.7%) had 3 missing items; and lastly, 2 youth (0.7%) had 4 missing items.

Grade-level groups—The younger youth group in this sample included 152 youth in grades K-2 (ages 3 to 8.83 years; M=5.23; SD=1.48), including 68 boys (44.7%) and 84 girls (55.3%). The older youth group included 155 youth in grades 3–12 (ages 7.42 to 17.50 years; M=12.09; SD=2.79), including 65 boys (41.9%) and 89 girls (57.4%).

Experience groups—The Post-Institutionalized group (exposure to early caregiving adversity and neglect) in this sample included 100 youth who experienced institutional care (e.g., orphanages) abroad until adopted by families in the United States. This group included youth in grades K-12, with an age range of 3.08 to 17.17 years (M=9.14 years; SE=3.36). The Comparison group (without histories of the specific early-life stressful events described above) in this sample included 195 youth in grades K-12, with an age range of 3.17 to 17.50 years (M=8.56 years; SE=4.43).[1] Additional demographic characteristics may be seen in Table 1.

Institutional care (e.g., orphanage rearing), even in the best circumstances, is typically sparse, unstable, and regimented (Gunnar, Bruce & Grotevant, 2000). Unfortunately, it is also a naturally occurring example of early caregiving adversity in humans affecting millions of children worldwide (www.hrw.org). Although there are many levels of deprivation that Post-Institutionalized youth may have experienced, intervention studies suggest that many of the mental health effects of institutional care are likely to be related to institutionalization itself rather than preexisting genetic or prenatal conditions of the child (Bos et al., 2011; Nelson et al., 2007; The St. Petersburg-USA Orphanage Research Team, 2008).

The post-institutionalized youth were recruited from families who had received local international adoption consultation services or had responded to advertisements circulated via electronic mail distribution lists of international adoption family networks. The comparison group was recruited via flyer advertisements placed within the surrounding community. Families were of high socio-economic status, where the median and modal household income was well above the median annual household income in the United States ($58,172; US Department of State, 2010), and median education level of parents was between a Bachelor's and a Master's Degree. Children in the comparison group were only included in the study if they were free of psychiatric or neurological diagnoses, which was confirmed with parent phone interview. All included participants had an average estimated IQ of 70 or greater. IQ was assessed via two subtests from the Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999) for all participants 6 years old and above.

Measures

Child Behavior Checklist for Ages 6–18 (CBCL/6-18; Achenbach & Rescorla, 2001)—The 120 items on the CBCL were used to assess youth in the present sample ages

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[1]The number youth in the 'Post-Institutionalized' group (n=100) and 'Comparison' group (n=195) do not sum to the total number of youth in the present sample (i.e., 307) because 12 youth from the full sample were included of neither of these groups due to being from a third 'foster care' group, which is characteristic of neither the Post-Institutionalized' group nor the 'Comparison' group.

6–18 years. Each item on this measure is rated as Not True (0), Somewhat or Sometimes True (1), or Very True or Often True (2). Validity and reliability of the narrow band (syndrome and DSM-oriented) and broad band (internalizing and externalizing) scale scores have been documented (Achenbach et al., 2001), and extensive normative data are available for children ranging from 6 to 18 years. We used CBCL T-scores for all analyses. For the younger youth in grades K-2 (who were ages 1 to 5 years old), we used the CBCL 1.5-5 (Achenbach & Rescorla, 2000), which is rated on the same scale, but with 100 items instead of 120. Both versions have substantial support for the reliability and validity of its scores across various sample types and countries (Achenbach & Rescorla, 2000, 2001; Ivanova et al., 2010). We used the T-scores from the Anxious/Depressed scale as a convergent validity criterion measure (as discussed further below). According to the ASEBA manual, T-scores of 60 to 63 fall in the borderline range, and T-scores above 63 fall in the clinical range (Achenbach, 1991). The internal consistency estimates of the Anxious/Depressed scale was .76 for the CBCL 1.5-5 forms (used by the younger group) and .95 for the CBCL 6–18 forms (used by the older group).

Revised Child Anxiety and Depression Scales, parent version (RCADS-P; Ebesutani, Bernstein, Nakamura, Chorpita & Weisz, 2010; Ebesutani, Chorpita, Higa-McMillan, Nakamura, Regan, & Lynch, 2011)—The RCADS-P is a parent report form of anxiety and depression and includes 47 items designed to assess the following depression and anxiety disorders in youth: generalized anxiety disorder (GAD), separation anxiety disorder (SAD), obsessive-compulsive disorder (OCD), social anxiety disorder (SOC), panic disorder (PD), and major depressive disorder (MDD). The RCADS-P also yields an Anxiety Total score (sum of all five anxiety subscales) and a Total (Anxiety and Depression) score (sum of all six subscales). On the RCADS-P, parents are asked to rate items according to how often each applies to their child, with responses ranging from 0-3, corresponding to "never," "sometimes," "often," and "always." Previous studies have found support for the reliability, factor structure, and convergent and discriminant validity for its six-factor structure in both a clinic-referred sample and school-based sample of children and adolescents, grades 3–12 (Ebesutani et al., 2010, 2011). RCADS-P mean raw scores were used for all analyses.

Procedure

All youths and caregivers underwent standardized Institutional Review Board-approved notice of privacy and consent procedures prior to any data collection. Families visited the laboratory, where parents completed questionnaires separately from their children and adolescents who were otherwise occupied with laboratory tasks in a separate room. Parents were asked to read each question about their child carefully and complete the information to the best of their knowledge. Parents completed questionnaires in a private room.

Data Analytic Approach

Scale Score Reliability—We evaluated whether scores reported by parents on the RCADS-P surpassed benchmarks for adequate reliability in each of the following age groups and risk-factor groups: (a) younger youth (in grades K-2) (b) older youth (in grades 3-12), as well as (c) 'Post-Institutionalized' youth and (d) 'Comparison' youth. To assess this, we

examined whether the Cronbach's alpha internal consistency coefficients of the RCADS-P scores for these groups met benchmark for adequate reliability. We used .70 as our benchmark for adequate reliability (Nunnally, 1978).

Factorial Validity—We then conducted confirmatory factor analysis (CFA) using Mplus 7.11 (B. Muthen & Muthen, 2012) to examine how well the six-factor structure of the RCADS-P fit the data from the younger youth group and 'Post-Institutionalized' group in the present study. We treated our data as ordinal and used polychoric correlations (Jöreskog, 1994; Olsson, 1979) and the robust weighted least-squares with mean and variance adjustment (WLSMV) estimator. We used the WLSMV estimator given that this estimator has been recommended when dealing with categorical data (B. Muthen, Du Toit, & Spisic, 1997; Flora & Curran, 2004; Holgado-Tello, Chacon-Moscoso, Barbero-Garcia & Vila-Abad, 2010). With the WLSMV estimator, all available information is used to estimate the model through pairwise (present) correlations.

We examined fit of the six-factor model via the following fit indices: Root Mean Square Error of Approximation (RMSEA; Steiger, 1990); Comparative Fit Index (CFI; Bentler, 1990), and Tucker–Lewis index (TLI; Tucker & Lewis, 1973). We used CFI values greater than .90 (Bentler, 1990) and greater than .95 (Hu & Bentler, 1999) as benchmarks for acceptable and good model fit, respectively. Regarding RMSEA, we used values lower than .08, and lower than .05 as benchmarks for acceptable and good fit, respectively (Browne & Cudeck, 1993).

Measurement Invariance—To examine the equivalence of the RCADS-P factor structure across subgroups, we conducted measurement invariance analyses in a CFA framework (see Brown, 2006). The first test of these measurement invariance analyses was to examine configural invariance (also referred to as the test of "equal form"). The test of configural invariance examines whether the general factor structure (i.e., item-to-factor relations) is equivalent across both subgroups. In other words, are the factors associated with the same item clusters across groups? Configural invariance is supported if the fit indices surpass the aforementioned cut offs for good model fit.

If configural invariance is supported, then metric invariance can be tested. The test of metric invariance examines whether factor loadings are equivalent across groups. In other words, do the factors have the same meaning across groups? If the factors have the same meaning across groups, then the factors would affect item response variation equally across groups (as evidenced by equal factor loadings across groups). Metric invariance is supported if imposing such factor loading constraints across groups do not significantly degrade model fit relative to the equal form solution (i.e., ΔCFI < .005, ΔRMSEA < .01; Chen 2007). If metric invariance is supported, then scalar invariance can be tested.

The test of scalar invariance examines whether item thresholds (or item *intercepts*, when dealing with continuous data) are equivalent across groups. This tests whether the comparison of group means is meaningful. More specifically, testing for invariance of item thresholds/intercepts examines whether differential acquiescence response styles exist and have caused one group to respond systematically higher or lower than the other group. If so,

then comparison of group mean scores would not be meaningful. If the item threshold constraints do not significantly degrade model fit relative to the equal factor loading solution (i.e., CFI < .005, RMSEA < .01), then scalar invariance is supported. If scalar invariance is not found, then the items are known to be associated with differential item functioning across the subgroups for the reasons stated above (McDonald, 1999). It is important to examine for the presence of differential item functioning (through the test of measurement invariance) because the presence of differential item functioning (i.e., a lack of measurement invariance) suggests that individuals in different groups who fall at the same location of the underlying trait (e.g., same level of anxiety) would have different observed scores (due to the differential item functioning between groups). Therefore, when measurement invariance is present, we can have more confidence that differences in raw scores between groups reflect actual differences in the underlying latent dimension between groups.

Convergent validity analyses—We examined the convergent validity of the RCADS-P by examining the correlations between reports on the RCADS-P (anxiety and depression scales) and the Anxious/Depressed scale on the CBCL (for the young versus older youth group). We expected all correlations to be highly positive and significant. With respect to the RCADS-P Total Score, this scale was found to correlate with the CBCL Anxious/Depressed scale at .70 in a previous study (Ebesutani, Chorpita, Higa-McMillan, Nakamura, Regan, & Lynch, 2011). We thus expected these scales to correlate to a similar degree in the present study.

Mean Differences—Lastly, we examined differences in mean scores on each of the RCADS-P scales between the 'Post-Institutionalized' and 'Comparison' groups. Given that the 'Post-Institutionalized' youth represents an 'at-risk' group for developing internalizing problems and are known to exhibit mental health and behavior problems later in life (van der Vegt et al., 2009), we expected that the RCADS-P scale scores would be significantly greater in the 'Post-Institutionalized' group compared to the 'Comparison' group.

Results

Scale Score Reliability

Younger versus Older Youth—The Cronbach alpha reliability estimate associated with reports on the RCADS-P for the younger and older youth groups appear in Table 2. Results revealed that all subscales of the RCADS-P for the younger group (grades K - 2) met benchmark for adequate reliability ($\alpha > .70$). Notably, the MDD (depression) subscale had a significantly larger reliability estimate in the older group ($\alpha = .82$) compared with the younger group ($\alpha = .71$), $p = .009$. These results are consistent with the finding that depression undergoes increased symptom differentiation over the course of childhood and adolescent development (Price et al., 2013), and depression symptoms may be less apparent (Kashani, Ray, & Carlson, 1984), although still present (Egger, & Angold, 2006), among younger youth. Nonetheless, the depression subscale scores met the cut off for acceptable reliability in both grade-level groups.

Post-Institutionalized versus Normal-Controls—The Cronbach alpha reliability estimates associated with the RCADS-P for the 'Post-Institutionalized' and 'Normal-Controls' groups appear in Table 3. All subscales of the 'Post-Institutionalized' group met benchmark for adequate reliability ($\alpha > .70$). All estimates fell above .80, which is well above the acceptable reliability cut off.

Factorial Validity and Measurement Invariance

Younger versus Older Youth—Model fit of the single-sample solutions for the 6-factor model among the younger and older youth groups appear in Table 4. As expected and demonstrated in previous studies (Ebesutani et al., 2010, 2011), the six-factor model fit the data well among the older youth sample (e.g., RMSEA=.04, CFI=.969). In the younger youth sample, fit was also found to be acceptable (e.g., RMSEA = .08). All factor loadings were also significant in this younger youth sample. Because model fit based on CFA was somewhat below benchmark for the younger youth group based specifically on the CFI fit index (i.e., CFI=.810), we compared the 6-factor model (in the 'Younger' youth sample) against a simplified and nested two-factor model (of anxiety and depression; collapsing all anxiety subscales into a single "Anxiety Factor") using the 'difftest' command in Mplus. The 6-factor model fit significantly better than this two-factor model, as evidenced by a significant chi-square difference test, $\chi^2_{\text{diff}}(14)=407.01$, $p<.001$, and the two-factor model was associated with poor model fit based on both RMSEA and CFI (i.e., RMSEA=.095; CFI=.749). Inter-correlations among the factors for both the 'Younger' and 'Older' youth subgroups fell within the expected range, ranging from .37 to .85 in the 'Younger' group and from .62 to .85 in the 'Older' group. Overall, these results provided support for the 6-factor structure in both the "Older" and "Younger" youth samples. We therefore proceeded to examine configural invariance of the 6-factor RCADS model across the younger and older youth subgroups.

The configural invariance test of "equal form" revealed that the six-factor solution fit both the younger and older youth groups equally well, as evidenced by good model fit indices (i.e., RMSEA=.058, CFI=.908). The RCADS-P six-factor solution demonstrated metric invariance (i.e., equal factor loadings) across the younger and older youth groups, as evidenced by good model fit (i.e., RMSEA=.058, CFI=.904) and a non-significant degradation in fit indices (i.e., ΔCFI < .005, ΔRMSEA < .01). Similarly, the RCADS-P six-factor solution also demonstrated scalar invariance (i.e., equal item thresholds) across the younger and older youth groups, as evidenced by good model fit (i.e., RMSEA=.057, CFI=.906) and a non-significant degradation in CFI (i.e., ΔCFI < .005, ΔRMSEA < .01). Given support for the measurement invariance of the 6-factor RCADS model across younger and older youth, we then examined the invariance of this model across the 'Post-Institutionalized' versus 'Comparison' youth groups.

Post-Institutionalized versus Normal-Control—Model fit of the single-sample solutions for the 6-factor model specific to the 'Post-Institutionalized' and 'Comparison' youth groups appear in Table 5. The six-factor model fit the data well among the "Early-Adversity' group (e.g., RMSEA=.037, CFI=.962). All item-to-factor loadings were also significant for each of the six latent factors in this group. As expected, model fit indices

were similarly high in the 'Comparison' group (e.g., RMSEA=.036, CFI=.941); all of their item-to-factor loadings were also high and significant. Inter-correlations among the factors within each subgroup also fell within the expected range, ranging from .45 to .85 in the 'Comparison' group and from .47 to .80 in the 'Post-Institutionalized' group.

The configural invariance test of "equal form" revealed that the six-factor solution fit both of these groups equally well, as evidenced by good model fit indices (i.e., RMSEA=.043, CFI=.948). The RCADS-P six-factor solution also demonstrated metric invariance (i.e., equal factor loadings) across these groups, as evidenced by good model fit (i.e., RMSEA=.042, CFI=.948) and a non-significant degradation in fit indices (i.e.,   CFI < .005,   RMSEA < .01). Similarly, the RCADS-P six-factor solution demonstrated scalar invariance (i.e., equal item thresholds) across the 'Post-Institutionalized' versus 'Comparison' youth groups, as evidenced by good model fit (i.e., RMSEA=.041, CFI=.949) and a non-significant degradation in fit indices (i.e.,   CFI < .005,   RMSEA < .01).

Convergent Validity Analyses

Results of the convergent validity analyses across the 'Younger' and 'Older' youth subsamples appear in Table 6. Results revealed that all convergent validity coefficients in the younger youth sample (i.e., convergence with similar scales on the CBCL) were both highly positive and significant. The same was also true for the convergent validity coefficients in the older youth sample. The RCADS-P Total Score also correlated with the CBCL Anxious/Depressed scale to a similar degree as found in a previous study (r=.70; Ebesutani, Chorpita, Higa-McMillan, Nakamura, Regan, & Lynch, 2011) in both the Younger group (r=.72) and Older group (r=.69).

Mean Differences Between Groups

Differences in mean RCADS-P raw scale scores between the 'Post-Institutionalized' and 'Comparison' may be seen in Table 7. As expected, the RCADS-P Total Anxiety and Depression scale score was significantly higher in the 'Post-Institutionalized' group (M=21.99, $S.D.$=16.30) compared with the 'Comparison' group (M=17.98, $S.D.$=13.44), F=5.06, p< .05. There were two other significant differences between these groups based on the RCADS-P subscale scores. First, the RCADS-P Depression (MDD) scale score was significantly higher in the 'Post-Institutionalized' group (M=4.18, SD=3.52) compared with the 'Comparison' group (M=2.99, SD=3.12), F=8.77, p< .05. Second, the RCADS-P Generalized Anxiety Disorder scale score was significantly higher in the 'Post-Institutionalized' group (M=4.18, $S.D.$=3.52) compared with the 'Comparison' group (M=2.74, $S.D.$=2.66), F=4.95, p< .05. All other RCADS-P scale scores were not significantly different between these groups.

Discussion

In the present study, we examined the strength of the reliability, validity, and factor structure of the RCADS-P scale scores for application to two new under-studied yet important samples: (a) younger youth in grades K-2 and (b) 'at-risk' children with histories of caregiver neglect. Reliability of reports on the RCADS-P for younger youth in grades K-2

fell in the acceptable range across all subscales. These results are consistent with results from Egger and colleagues (2006) who examined the reliability of reports provided by parents of preschoolers ages 2 to 5 years old on the Preschool Age Psychiatric Assessment form. In their study, they found that parents of preschoolers were able to provide reports of psychiatric symptoms that both met benchmark for adequate reliability and that did not differ significantly from older children and adults. These results are also consistent with results from McGuire and Richman (1986) who found (internal consistency-based) reliability estimates of the Preschool Behaviour Checklist (completed by caregivers of preschoolers) to be in the .80 range. Although reliability of the RCADS-P Depression scale was significantly higher in the older group sample, this is to be somewhat expected given that symptoms of depression have been found to experience increased symptom differentiation (and thus should be easier to be observed and identified by reporters) as children grow older (Price et al., 2013). The reliability estimate of this younger group subscale nonetheless met benchmark for adequate reliability in the present sample. Similarly, all RCADS-P subscales were found to be associated with acceptable (and relatively high) levels of reliability in the 'Post-Institutionalized' group in the present sample.

Similar supportive findings were found with respect to the 6-factor structure of the RCADS-P based on these newly explored youth samples. Specifically, measurement invariance of the general underlying structure, factor loadings, and item thresholds were supported across the 'Young' and 'Older' youth, as well as across the 'Post-Institutionalized' and 'Comparison' youth in the present sample. This is one implication of the present study given that comparisons may want to be made for both clinical and research purposes between youths of these different groups (i.e., younger versus older youth; post-institutionalized versus non-institutionalized children). Establishing measurement invariance at the scalar invariance level is a necessary step to ensure that differences in raw scores reflect actual differences in the underlying dimension. The findings across grade-level groups are consistent with Spence and colleagues (2001) recent finding that their preschool anxiety scale fit the structure of anxiety disorder well in their preschool sample. In their study, however, the degree to which the separation anxiety factor and generalized anxiety factor were well-differentiated (based on parent reports of their preschool children) was somewhat unclear. In the present study, however, we found adequate discrimination between these factors based on the young youth sample; the correlation between these factors was .72. This correlation was in the expected range for correlations between anxiety subscales and it was lower than the correlations between the other anxiety subscales. The present study also demonstrated support for convergent validity with an external criterion measure of anxiety and depression based on the CBCL—a wide used and well-validated measure of youth problems from 1.5 years old through adulthood. This is another implication of the present findings. That is, the RCADS-P may be used as an alternative to other established parent-report questionnaires of child anxiety and depression. Notably, the RCADS-P is a freely available measure (in contrast to the CBCL, which is a relative costly, proprietary measure) and so for clinicians and researchers interested in assessing anxiety and depression in youth, the RCADS-P may be a more affordable, quicker and cost-effective way to provide high-quality assessment of these areas. The RCADS (child and parent versions) and their normative-based scoring programs

are also available for free download and use at the following website: www.childfirst.ucla.edu/Resources.html.

A particularly interesting set of findings in the present psychometric examination were the results pertaining to the differences in mean RCADS-P scores across the 'Post-Institutionalized' and 'Comparison' groups. As expected, the 'Post-Institutionalized' group was associated with significantly higher total internalizing scores compare to the 'Comparison' group. This results is consistent with the finding that youth exposure to early-life adversity (such as abandonment, neglect, and poverty) are at greater risk for developing internalizing problems later on in their development (Champagne, 2010). However, perhaps more interesting, is the finding that among the specific subscales, only the Depression subscale and the Generalized Anxiety Disorder subscale were found to be significantly higher in the 'Post-Institutionalized' group compared to the 'Comparison' group (with all other subscale scores being at comparable levels across these groups). First, this shows that the parents of the children with histories of early-life caregiver neglect do not simply report systematically higher scores across all areas for their children on assessment measures; in the present study, these parents reported elevations *specific* to the two areas of depression and generalized anxiety. In a way, this provides support for the *validity* of parents reports of 'at-risk' children with histories of early-life adversities. Specifically, had their reports been consistently higher across *all* subscales, it would be difficult to know whether these elevations are indicative of 'true' elevations in these children (across all subscales), or simply reporting artifacts of parents having inflated (biased) perceptions of their children's problems due to their knowledge of their children experiencing unique early-life adversities. Additional support for these findings and for this specific set of elevations across the RCADS-P subscales is that other researchers have also found that the problems areas of depression and generalized anxiety appear to together comprise what has been referred to as the "Distress" factor (Lahey et al., 2008; Watson, 2005). These youth indeed come from high-stress histories, and so the present findings are consistent with the notion that these children should have elevated "distress" experiences (i.e., mapping on to both the MDD and GAD 'distress' scales) relative to their normative counterparts. That said, it is important to also note that the present 'Post-Institutionalized' group was not a clinical sample, and so although their scores were significantly higher than the 'Comparison' group, their scores on average were not necessarily in the clinically-elevated range. Nonetheless, these results are consistent with the notion that these youth represent an 'at-risk' population, with (distress-related) depression and generalized anxiety scores falling significantly higher than their normal-control counterparts. These results also indicate the need for continued monitoring or at least periodic assessment of these youth across their development, as well as the provision of preventative therapeutic interventions. Related to monitoring, it is worth noting that Kösters and colleagues (2015) recently found the RCADS (child version) scores to be sensitive to change across a treatment intervention. This thus provides promise that the RCADS-P also will be able to be used as a useful treatment monitoring tool across these different youth types.

The results of the present study extend support for the use of the RCADS-P to new and important youth populations. However, there were limitations to the present study that should be considered when considering and interpreting these findings. First, the convergent

validity analyses were based on a syndrome-related "Anxious/Depressed" scale—this criterion measure is not as construct-specific to the constructs targeted by the individual RCADS-P subscales (except for the RCADS-P Anxiety/Depression Total Internalizing scale). The availability of more construct-specific external criterion measures would have increased the specificity of these analyses. Another limitation is that our test of reliability estimates were based on internal consistency, as opposed to on other recommended tests of reliability, such as test-retest correlations. Notably, other studies also used internal consistency to examine reliability across younger and older subgroups (e.g., Ebesutani, Bernstein, Martinez, Chorpita, & Weisz, 2011), yielding results similar to the present study. Nonetheless, the use of a test-retest paradigm to investigate reliability would have further strengthened confidence in the reported estimates of scale reliability and should be an area of future psychometric research for these populations. Another limitation is that we did not have diagnostic information available on these youth to allow for additional (diagnosis-related) analyses, such as receiver operating characteristic (ROC) functions; doing so would have allowed us to examine the discriminative and classification properties of the RCADS-P subscales across these subgroups. This is another needed area of future psychometric research. Another limitation is that the present study was not large enough to provide normative data to allow for scoring T-scores for comparison purposes among these two new youth samples. Future data collection efforts should focus on collecting such data from representative samples to increase the utility and interpretability of future scores from these newly extended populations. The clinical utility of such T-scores should also be examined in future psychometric studies with respect to their ability to accurately classify those in need of clinical intervention as well as their sensitivity to change. The current dataset is also cross-sectional in nature, which precludes the ability to examine developmental changes of anxiety over time. Future studies would therefore do well to use longitudinal study designs with the RCADS-P to examine and compare developmental changes of anxiety over the course of development.

Despite these limitations and areas for future research and data collection efforts, the present study provided psychometric support for the use and interpretation of the RCADS-P (parent-report) scores for two new important populations of youth, including youth down to kindergarten and also 'at-risk' youth who come from histories of early-life caregiver neglect. This extension is important particularly given that emotional and behavioral problems are present among such young youth samples (Egger & Angold, 2006), and parents have the potential to be key informants to be able to report on younger children's symptoms. The development of reporting instruments, such as the RCADS-P, for parents to record symptoms of their children throughout younger childhood to later adolescent development is an important step in better understanding the development, maintenance and trajectory of internalizing problems across youth development and for children to be able to receive the support services they need—including 'at-risk' youth who come from difficult and highly stressful early-life experiences of adversity. It is therefore hoped that the RCADS-P can provide the field a useful parent-report measure that spans a larger grade range and referral type to extend both research and clinical assessment to a wider range of youth.

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Table 1

Demographic characteristics and means/standard deviations of scores

	Younger Group (grades K-2)	Older Group (grades 3-12)	F-test	'Post-Institutionalized' Group	'Comparison' Group	F-test
Boys: n (%)	68 (44.7%)	65 (41.9%)	—	33 (33.0%)	93 (47.7%)	—
Girls: n (%)	84 (55.3%)	89 (57.4%)	—	66 (66.0%)	102 (52.3%)	—
Grade: range	K - 2	3 - 12	—	K - 12	K - 12	—
Age in years: Mean (SD)	5.23 (1.48)	12.09 (2.79)	—	9.14 (3.36)	8.5 (4.43)	—
Ethnicity	—	—	—	—	—	—
American Indian/Alaska Native	1 (.7%)	3 (1.9%)	—	0 (0%)	4 (2.1%)	—
Asian/Asian American	43 (28.3%)	35 (22.6%)	—	42 (42%)	29 (14.9%)	—
Native Hawaiian or Other Pacific Islander	2 (1.3%)	0 (0%)	—	0 (0%)	2 (1.0%)	—
Black or African American	12 (7.9%)	35 (22.6%)	—	0 (0%)	47 (24.1%)	—
European-American/Caucasian	77 (50.7%)	51 (32.9%)	—	42 (42%)	86 (44.1%)	—
Other	8 (5.3%)	24 (15.5%)	—	42 (42%)	17 (8.7%)	—
Unknown	0 (0%)	1 (.6%)	—	0 (0%)	1 (0.5%)	—
Missing	9 (5.9%)	6 (3.9%)	—	4 (4%)	9 (4.6%)	—
Full Scale IQ: Mean (SD)	113.85 (17.26)	106.34 (16.00)	$F=9.11, p<.01$	104.19 (17.29)	111.20 (15.82)	$F=9.19, p<.01$
RCADS-P SAD: Mean (SD)	4.23 (3.35)	3.28 (3.12)	$F=6.50, p=.01$	4.82 (3.14)	2.22 (2.66)	$F=34.16, p<.01$
RCADS-P GAD: Mean (SD)	2.33 (2.32)	3.63 (3.15)	$F=17.11, p<.01$	4.87 (3.26)	2.82 (2.87)	$F=27.25, p<.01$
RCADS-P Panic: Mean (SD)	1.05 (2.15)	1.82 (2.55)	$F=8.20, p<.01$	2.6 (3.05)	1.39 (2.08)	$F=16.95, p<.01$
RCADS-P SOC: Mean (SD)	4.77 (3.84)	8.35 (4.99)	$F=49.72, p<.01$	10.1 (4.62)	7.16 (4.81)	$F=33.21, p<.01$

	Younger Group (grades K-2)	Older Group (grades 3-12)	F-test	'Post-Institutionalized' Group	'Comparison' Group	F-test
RCADS-P OCD: Mean (SD)	0.71 (1.29)	1.21 (2.01)	F= 6.79, p=.01	1.92 (2.27)	0.78 (1.72)	F=20.47, p<.01
RCADS-P MDD: Mean (SD)	2.64 (2.59)	4.1 (3.73)	F= 15.81, p<.01	5.8 (3.96)	3.02 (3.24)	F=49.40, p<.01
RCADS-P Anxiety Total: Mean (SD)	13.08 (9.95)	18.3 (12.95)	F= 15.89, p<.01	24.3 (12.54)	14.37 (11.88)	F=46.99, p<.01
RCADS-P Total (Anxiety and Depression) : Mean (SD)	15.71 (11.85)	22.4 (15.86)	F= 17.47, p<.01	30.1 (15.65)	17.39 (14.23)	F=53.31, p<.01
CBCL-Anxious/Depressed: Mean T score (SD)	53.16 (5.75)	55.94 (7.96)	F= 11.71, p<.01	59.04 (9.16)	53.88 (6.5)	F=32.23, p<.01

Note. SAD = Separation Anxiety Disorder; GAD = Generalized Anxiety Disorder; SOC = Social Anxiety Disorder; OCD = Obsessive-Compulsive Disorder; MDD = Major Depression Disorder.

Table 2

Internal Consistency estimates for the Younger and Older Youth Groups.

	# of items	Younger Group (grades K-2)		Older Group (grades 3-12)	
		n	Internal Consistency	n	Internal Consistency
SAD	7	143	.72	148	.76
GAD	6	150	.82	153	.87
Panic	9	149	.90	149	.85
Social	9	141	.85	148	.89
OCD	6	151	.70	153	.79
Anxiety Total	37	131	.92	133	.94
MDD	10	148	.71	152	.82
Total	47	128	.93	133	.95

Note. SAD = separation anxiety disorder; GAD= generalized anxiety disorder; MDD= major depressive disorder; Social= social anxiety disorder; OCD= obsessive-compulsive disorder; Total= total anxiety and depression score.

Table 3

Internal Consistency estimates for the 'Post-Institutionalized' and 'Comparison' groups.

| | # of items | 'Post-Institutionalized' Group | | 'Comparison' Group | |
		n	Internal Consistency	n	Internal Consistency
SAD	7	100	.81	195	.70
GAD	6	100	.88	195	.84
Panic	9	100	.87	195	.79
Social	9	100	.89	195	.90
OCD	6	100	.78	195	.70
Anxiety Total	37	100	.94	195	.92
MDD	10	100	.79	195	.79
Total	47	100	.95	195	.93

Note. SAD = separation anxiety disorder; GAD= generalized anxiety disorder; MDD= major depressive disorder; Social= social anxiety disorder; OCD= obsessive-compulsive disorder; Total= total anxiety and depression score.

Table 4

Fit statistics for the confirmatory factor analytic models for the younger ($n=152$) and older ($n=155$) youth groups

Model	χ^2	df	p	RMSEA	CFI	df	CFI
Single-Sample Solutions							
6-factor Single Sample (Older)	1218.58	1019	<.001	.04	.969	—	—
6-factor Single Sample (Younger)	2097.34	1019	<.001	.08	.810	—	—
Measurement Invariance Tests							
6-factor Configural Invariance Solution ("equal form")	2810.87	1860	<.001	.058	.908	—	—
6-factor Metric Invariance ("equal factor loadings")	2885.09	1899	<.001	.058	.904	39	.004
6-factor Scalar Invariance ("equal thresholds")	2930.60	1960	<.001	.057	.906	61	.002

Note. GFI = goodness-of-fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index; MDD = major depressive disorder; GAD = generalized anxiety disorder, SAD = separation anxiety disorder, SOC = social anxiety disorder, OCD = obsessive-compulsive disorder, PD = panic disorder.

Table 5

Fit statistics for the confirmatory factor analytic models for the 'Post-Institutionalized' (n=100) and 'Comparison' (n=195) groups

Model	χ^2	df	p	RMSEA	CFI	df	CFI
Single-Sample Solutions							
6-factor Single Sample ('Post-Institutionalized')	1156.65	1019	<.001	.037	.962	—	—
6-factor Single Sample ('Comparison')	1271.86	1019	<.001	.036	.941	—	—
Measurement Invariance Tests							
6-factor Configural Invariance Solution ("equal form")	1943.76	324	<.001	.043	.948	—	—
6-factor Metric Invariance ("equal factor loadings")	1975.74	289	<.001	.042	.948	35	.000
6-factor Scalar Invariance ("equal thresholds")	2033.27	230	<.001	.041	.949	59	.001

Note. GFI = goodness-of-fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index; MDD = major depressive disorder, GAD = generalized anxiety disorder, SAD = separation anxiety disorder, SOC = social anxiety disorder, OCD = obsessive-compulsive disorder, PD = panic disorder.

Table 6

Agreement Between Corresponding RCADS-P and CBCL Scales for the Younger (grades K-2) and Older (grades 3-12) Subsamples

		Correlations	
RCADS-P	**CBCL**	**Younger (n=146)**	**Older (n=144)**
Separation Anxiety Disorder	Anxious/Depressed	.51	.47
Generalized Anxiety Disorder	Anxious/Depressed	.56	.64
Panic Disorder	Anxious/Depressed	.42	.49
Social Anxiety Disorder	Anxious/Depressed	.57	.57
Obsessive-Compulsive Disorder	Anxious/Depressed	.59	.56
Major Depression Disorder	Anxious/Depressed	.65	.60
Anxiety Total	Anxious/Depressed	.69	.67
Total (Anxiety and Depression)	Anxious/Depressed	.72	.69

Note. All correlations significant at $p < .01$.

Table 7

Mean differences between the 'Post-Institutionalized' and 'Comparison' groups on the RCADS Scales.

RCADS Scales	'Comparison' Group			'Post-Institutionalized' Group			F-tests		
	n	Mean	SD	n	Mean	SD	F value	df	p
Separation Anxiety Disorder	195	3.68	3.05	100	4.03	3.74	0.738	1	.391
Generalized Anxiety Disorder*	195	2.74	2.66	100	3.52	3.13	4.95	1	.027
Panic Disorder	195	1.33	2.12	100	1.82	2.97	2.65	1	.105
Social Anxiety Disorder	195	6.67	4.81	100	7.23	4.72	2.15	1	.144
Obsessive-Compulsive Disorder	195	0.87	1.50	100	1.21	2.10	2.60	1	.108
Anxiety Total	195	14.99	11.00	100	17.81	13.57	3.68	1	.056
Major Depressive Disorder*	195	2.99	3.12	100	4.18	3.52	8.77	1	.003
Total Internalizing*	195	17.98	13.44	100	21.99	16.30	5.06	1	.025

Note. RCADS = Revised Child Anxiety and Depression Scale.