


Development and Validation of a Measure of Attachment Disorders Based on *DSM-5* Criteria: The Early TRAuma-Related Disorders Questionnaire (ETRADQ)

Assessment
1–16
© The Author(s) 2020
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1073191120981763
journals.sagepub.com/home/asm


Sebastien Monette^{1,2} , Chantal Cyr^{1,2}, Miguel M. Terradas^{2,3},
Sophie Couture^{2,4}, Helen Minnis⁵, and Stine Lehmann^{6,7}

Abstract

Background: A review of the scientific literature showed few valid tools for assessing reactive attachment disorder (RAD) and disinhibited social engagement disorder (DSED), two diagnostic entities traditionally grouped under “attachment disorders.” The Early TRAuma-related Disorders Questionnaire (ETRADQ), a caregiver report, was developed to assess attachment disorders in school-age children based on the *Diagnostic and Statistical Manual of Mental Disorders—Fifth edition* criteria. This study sought to validate this instrument. **Method:** Caregivers of school-age children from the community ($n = 578$) and caregivers of at-risk children adopted or in out-of-home care ($n = 245$) completed a sociodemographic questionnaire, the ETRADQ, the Relationship Problem Questionnaire, the RADA (*RAD and DSED Assessment*) interview, and the Barkley Functional Impairment Scale for Children and Adolescents. **Results:** Confirmatory factor analysis of the ETRADQ items supported the expected organization of the measure, that is, two second-order factors and five subsfactors: (1) RAD scale (three subscales: Low selective attachment, Low social and emotional responsiveness, Emotional unpredictability) and (2) DSED scale (two subscales: Interactions with unfamiliar adults, Social disinhibition). All scales showed excellent internal consistency, test–retest reliability, convergent validity, and known-group validity. **Conclusions:** Results support the reliability and validity of the ETRADQ.

Keywords

reactive attachment disorder, disinhibited social engagement disorder, attachment disorders, questionnaire, maltreatment, out-of-home care, child protective services

Attachment disorders (AD) in children, that is, reactive attachment disorder (RAD) and disinhibited social engagement disorder (DSED), were initially studied almost exclusively in children institutionalized prior to being adopted. Pioneering the field were two famous longitudinal studies concerning institutionalized Romanian children: the *English and Romanian Adoptees* study (O’Connor et al., 1999; Sonuga-Barke et al., 2017) and the *Bucharest Early Intervention Project* randomized controlled trial (Smyke et al., 2002; Zeanah et al., 2017). In the *Bucharest Early Intervention Project*, the prevalence of AD was estimated at 22% at age 4 (18% DSED and 4% RAD), whereas in the *English and Romanian Adoptees* study, 21% of the children previously institutionalized demonstrated a “marked disinhibition” at age six and 10% did at age 11 (RAD was not measured in this study). According to the *Diagnostic and Statistical Manual of Mental Disorders—Fifth edition* (*DSM-5*; American Psychiatric Association [APA], 2013), the prevalence of DSED and RAD in populations of

“severely neglected children” is about 20% and 10%, respectively. Since the 2000s, AD have been investigated more and more in victims of child maltreatment not institutionalized in infancy in Western countries (Kay & Green, 2013; Kočovská et al., 2012; Lalande et al., 2014; Lehmann et al., 2016; Minnis et al., 2009; Oosterman & Schuengel, 2008; Pears et al., 2010; Vervoort et al., 2013; Zimmermann

¹Université du Québec à Montréal, Montréal, Québec, Canada

²CIUSSS Centre-Sud-de-l’île-de-Montréal, Montréal, Québec, Canada

³Université de Sherbrooke, Montreal, Québec, Canada

⁴Université de Montréal, Montreal, Québec, Canada

⁵University of Glasgow, Glasgow, Scotland, UK

⁶Norce Norwegian Research Centre, Bergen, Hordaland, Norway

⁷University of Bergen, Bergen, Hordaland, Norway

Corresponding Author:

Sebastien Monette, Département de Psychologie, Université du Québec à Montréal (UQAM), C.P. 8888, Succ. Centre-ville, Montréal, Québec H3C 3P8, Canada.

Email: monette.sebastien@uqam.ca

& Iwanski, 2019). Not only are AD among the least studied *DSM* diagnoses (Atkinson, 2019), they also appear to be among the most prevalent disorders among children in the care of child protective services (CPS): They have been found in 2% to 40% of children in foster care. Whereas RAD has been shown to be rather rare in foster children (2%-5%), DSED has been found to be more common (12%-30%; Boris et al., 1998; Bruce et al., 2019; Jonkman et al., 2014; Kay et al., 2016; Kliewer-Neumann et al., 2018; Lehmann et al., 2013; Woolgar & Baldock, 2015; Zeanah et al., 2004). The prevalence of these disorders in children in residential care have been estimated at 16% (9% RAD, 8% DSED, 0.5% both; Seim et al., 2019).

AD prevalence rates have varied widely from study to study, especially in the case of DSED. This variability could very well be linked not only to the different samples considered, but also to measurement issues (type of measures: questionnaire, interview, observation; nosological system: *Diagnostic and Statistical Manual of Mental Disorders—Fourth edition [DSM-IV]*, *DSM-5*, International Statistical Classification of Diseases and Related Health Problems—10th Revision [ICD-10], etc.). In a recent review, Lehmann et al. (2018) found some 20 instruments for measuring AD in the form of questionnaires, clinical interviews, and observation grids. However, none of these had been updated to assess RAD and DSED symptoms based on the complete set of *DSM-5* criteria, except for the RADA (*RAD and DSED Assessment*) interview (Lehmann et al., 2018), a recent *DSM-5* updated version of the CAPA-RAD (*Child and Adolescent Psychiatric Assessment—RAD section*) interview (Minnis et al., 2009). The RADA interview takes a clinician 30 minutes to 1 hour to administer. In this light, there seemed to be a clear need in both the clinical and research spheres to develop a standardized and normed RAD-DSED questionnaire based on the *DSM-5* criteria that clinicians could administer quickly as a screening tool before using a more time-consuming diagnostic tool such as the RADA.

RAD and DSED are diagnostic entities that underwent a major revision in the *DSM-5* (APA, 2013). Where the *DSM-IV* (APA, 1994) proposed two RAD subtypes (inhibited and disinhibited, see Table 1), the *DSM-5* describes two distinct disorders. The RAD inhibited subtype retained the RAD label, whereas the disinhibited subtype was now labeled DSED. Major changes were made, also, to the AD diagnostic criteria. For RAD, symptoms in the *DSM-IV* that overlapped with behaviors indicative of an insecure-disorganized attachment to the caregiver (e.g., “contradictory responses,” “the child may respond to caregivers with a mixture of approach, avoidance”) were removed. Other vague symptoms that could be confused with those of autism spectrum disorder (ASD), such as “Markedly disturbed and developmentally inappropriate social relatedness in most contexts” were replaced by criteria (RAD: B1 “minimal

social and emotional responsiveness to others”) that nevertheless remain very close to some ASD criteria. It is not surprising, then, that some researchers and clinicians feel that the differential diagnosis between RAD and ASD is one of the most difficult to make (Davidson et al., 2015). RAD is now described primarily as a disorder of the attachment system characterized by a lack of selective attachment to the caregiver (Criteria A1: rarely seek comfort and A2: rarely respond to comfort) and a socioaffective disturbance (Criteria B1: minimal socioemotional responsiveness, B2: limited positive affect, and B3: unexplained irritability/sadness/fearfulness; APA, 2013; Zeanah & Gleason, 2015). For DSED, the symptoms in the *DSM-IV* associated with a lack of selective attachment (e.g., “diffuse attachments,” “marked inability to exhibit appropriate selective attachments,” “lack of selectivity in choice of attachment figures”) were removed, as these proved associated with RAD rather than DSED (Zeanah & Gleason, 2015). DSED is now viewed as a social behavior disorder characterized by interaction with unfamiliar adults (Criteria A1: reduced reticence with unfamiliar adult, A2: overly familiar, A3: venturing away without checking back, A4: willingness to go off with an unfamiliar adult) and social disinhibition (Criterion B: socially disinhibited behavior not limited to impulsivity). Also, attachment disorders are now in a section named “Trauma- and Stressor-Related disorders” of *DSM-5*, which also explains why we choose to name our questionnaire an “Early TRAuma-related Disorders Questionnaire (ETRADQ)” instead of an “attachment disorders questionnaire.” These key changes in the diagnostic criteria for RAD and DSED clearly militate in favor of developing tools that cover all the symptoms updated in the *DSM-5*.

It is against this background that we undertook a study to examine the psychometric properties of a new instrument for evaluating AD, the ETRADQ. The instrument’s factor structure, reliability (internal consistency and test–retest) and validity (convergent and known-group) were examined in a group of children from the community and a group of at-risk children either adopted or placed by CPS in out-of-home care (foster care or residential care). In terms of convergent validity, we expected the ETRADQ’s scores to be associated positively to those of other measures of AD and of a measure of functional impairment. In addition, we expected children with an AD diagnosis (as established by a physician or psychologist) to present more symptoms of AD on ETRADQ scales than would children without such a diagnosis. We also expected children with a likely RAD diagnosis (as established by *DSM-5* classification on the RADA interview) to present more symptoms on ETRADQ’s RAD scales than those scoring below this threshold on the RADA, and we expected that children with a likely DSED diagnosis (as established by *DSM-5* classification on the RADA interview) to present more symptoms on ETRADQ’s

Table 1. Main Diagnostic Criteria for RAD and DSED in *DSM-IV*^a and *DSM-5*^b.

Inhibited RAD (<i>DSM-IV</i>)	RAD (<i>DSM-5</i>)
<p>Criterion A: Markedly disturbed and developmentally inappropriate social relatedness in most contexts, beginning before age 5 years, as evidenced by:</p> <p>A1) Persistent failure to initiate or respond in a developmentally appropriate fashion to most social interactions, as manifest by excessively inhibited, hypervigilant, or highly ambivalent and contradictory responses (e.g., the child may respond to caregivers with a mixture of approach, avoidance, and resistance to comforting, or may exhibit frozen watchfulness)</p>	<p>Criterion A (2/2): A consistent pattern of inhibited, emotionally withdrawn behavior toward adult caregivers</p> <p>(A1). <u>The child rarely or minimally seeks comfort when distressed</u></p> <p>(A2). The child rarely or minimally responds to comfort when distressed</p> <p>Criterion B (2/3): A persistent social and emotional disturbance</p> <p>(B1). Minimal social and emotional <u>responsiveness</u> to others</p> <p>(B2). <u>Limited positive affect</u></p> <p>(B3). <u>Episodes of unexplained irritability, sadness, or fearfulness that are evident even during nonthreatening interactions with adult caregivers</u></p>
Disinhibited RAD (<i>DSM-IV</i>)	DSED (<i>DSM-5</i>)
<p>Criterion A: Markedly disturbed and developmentally inappropriate social relatedness in most contexts, beginning before age 5 years, as evidenced by:</p> <p>(A2). <u>Diffuse attachments</u> as manifest by indiscriminate sociability with <u>marked inability to exhibit appropriate selective attachments</u> (e.g., excessive familiarity with relative strangers or <u>lack of selectivity in choice of attachment figures</u>)</p>	<p>Criterion A (2/4): A pattern of behavior in which a child actively approaches and interacts with unfamiliar adults</p> <p>(A1). Reduced or absent reticence in approaching and interacting with unfamiliar adults</p> <p>(A2). Overly familiar verbal or physical behavior</p> <p>(A3). <u>Diminished or absent checking back with adult caregiver after venturing away, even in unfamiliar settings</u></p> <p>(A4). Willingness to go off with an unfamiliar adult with minimal or no hesitation</p> <p>Criterion B: The behaviors in Criterion A are not limited to impulsivity (as in attention deficit/hyperactivity disorder) but include socially disinhibited behavior</p>

Note. RAD = Reactive Attachment Disorder; DSED = Disinhibited Social Engagement Disorder; *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders—Fourth edition*; *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders—Fifth edition*.

^aDiagnostic criteria also include that the disturbance is not attributable to a developmental delay or a pervasive developmental disorder (Criterion B), the presence of pathogenic care (Criterion C), and a presumed etiology of pathogenic care (Criterion D). ^bDiagnostic criteria also include for DSED: insufficient care (Criterion C), a presumed etiology of insufficient care (Criterion D) and a developmental age of at least 9 months (Criterion E). Diagnostic criteria also include for RAD: insufficient care (Criterion C), a presumed etiology of insufficient care (Criterion D), absence of ASD (Criterion E), onset before age 5 years (Criterion F), and a developmental age of at least 9 months (Criterion G). Specification for persistent (more than 12 months) and severe (all symptoms present) are described. Underline: significant change from *DSM-IV* to *DSM-5*.

DSED scale than those scoring below this threshold on the RADA.

Development of the ETRADQ

The items of the questionnaire were developed and selected based on the following principles. First, the items had to cover all the RAD and DSED symptoms as defined in *DSM-5*. In order to generate the ETRADQ items, we listed all the items of all the questionnaires and interviews used in research (see Lehmann et al., 2018) and we kept only those related to the *DSM-5* diagnostic criteria for RAD and DSED. These items were then adapted to be easily understood by an adult with a low education level. The 42 items retained were chosen by the first author for their presumed ability to measure the construct of the subscale to which they belonged, that is as follows: (1) RAD: Low selective attachment (RAD criteria A1, A2: eight items); (2) RAD: Low social and emotional responsiveness (RAD criteria B1, B2: nine items); (3)

RAD: Emotional unpredictability (RAD criterion B3: eight items); (4) DSED: Interaction with unfamiliar adults (DSED criteria A1, A3, A4: nine items); and (5) DSED: Social disinhibition (DSED criterion A2, B: eight items). Second, the items could not be redundant with other clinical entities included in the *DSM-5* (e.g., conduct disorder, oppositional defiant disorder, posttraumatic stress disorder, ASD, ADHD), with the construct of disorganized attachment or with callous–unemotional traits. Some questionnaires developed in the past, such as the RADS by Hall and Geher (2003) and the RADQ by Randolph (2000), had very few items measuring RAD or DSED behaviors and the majority of the items referred to behaviors associated with conduct disorder or to callous–unemotional traits, a phenomenon that some authors refer to as the “conduct disorder/callous–unemotional conceptualization of RAD” (Allen, 2018) but that runs counter to the empirical research in the field (Hanson & Spratt, 2000). In this regard, the RADS was found to be excessively correlated ($r = .90$) with the Child Behaviour

Checklist aggressive behavior scale (Hall & Geher, 2003), which suggests that the two instruments measure the same construct. Some authors (Allen, 2018) have questioned, with good reason, the validity of studies that used such instruments noncompliant with recognized nosological systems (*DSM*, *ICD*). Third, each subscale had to comprise at least five items to allow confirmatory factor analysis (CFA; Blunch, 2013). Consequently, certain behaviors that are not specifically described in the *DSM-5* but that could potentially measure the same aspects of RAD or DSED were covered based on the research published in the field and on clinical texts. For example, Criteria A1 “child rarely or minimally seeks comfort when distressed” and A2 “child rarely or minimally responds to comfort when distressed,” which must *both* be present to diagnose RAD under the *DSM-5*, reflect an “absence of selective attachment” (APA, 2013; Zeanah & Gleason, 2015). As it happens, there is practically no scientific literature on “selective attachment” and the operationalization of this construct, aside from the *Bucharest Early Intervention Project* studies, which define the absence of selective attachment as the absence of attachment behaviors (RAD Criteria A1 and A2) and the absence of a preference for one or more specific adults in children (Zeanah & Gleason, 2015). In the same vein, though the *DSM-5* describes specific approach behaviors toward unfamiliar adults for DSED (Criteria A1, A2, A4), Criterion B mentions “socially disinhibited behavior” without giving any concrete examples. Consequently, we developed items to measure social disinhibition toward unfamiliar adults (*Interactions with unfamiliar adults* subscale) and toward peers and familiar adults (*Social disinhibition* subscale). See the method section for additional details, Table 4 for the items per scale and also the supplemental material (available online) for the complete ETRADQ: (1) the original French-Canadian version and (2) its English translation (translation and back translation method).

Method

Participants

The overall sample comprised 823 French–Canadian caregivers of children 5 to 12 years old. The caregivers completed the French version of the ETRADQ. The community (COM) group comprised parents of children ($n = 578$, mean age = 7.99 years, $SD = 1.99$, 53% boys) recruited in three urban and suburban school boards in the province of Quebec, Canada. The at-risk (RISK) group comprised caregivers of three types of children at risk of having AD ($n = 245$). First, parents of adopted children ($n = 98$, mean age = 8.62 years, $SD = 2.31$, 54% boys) were recruited through community groups supporting adoptive parents (international and CPS adoptions). Second, foster parents of children ($n = 83$, mean age = 8.36 years, $SD = 2.35$, 59% boys) were recruited through CPS. The third

group consisted of childcare workers in charge of children ($n = 64$, mean age = 9.50 years, $SD = 1.68$, 58% boys) placed in residential care and monitored by CPS.

Instruments

Sociodemographic Questionnaire. Caregivers completed a 20-item questionnaire covering child characteristics, including age, sex, and known mental health diagnoses established by an accredited professional (psychologist or physician), and caregiver characteristics, including relationship to child and education level.

Early TRAuma-Related Disorders Questionnaire. The 42-item ETRADQ aims to evaluate disorders caused by early trauma, commonly referred to as AD, based on caregiver report. It was developed on the basis of an extensive review of the existing instruments for assessing AD (see Table 1 in Lehmann et al., 2018) and a hypothetical structure comprising two main scales with subscales. The RAD scale includes three subscales: *Low selective attachment (based on DSM-5 criteria A1, A2)*, *Low social and emotional responsiveness (B1, B2)*, and *Emotional unpredictability (B3)*. The DSED scale includes two subscales: *Interactions with unfamiliar adults (A1, A3, A4)* and *Social disinhibition (A2, B)*. Items are rated on a 4-point Likert-type scale: “0 = not at all true (never, very rarely happened),” “1 = a little bit true (happened sometimes, occasionally),” “2 = pretty much true (happened often, frequently)” and “3 = very much true (happened very often, very frequently).”

Relationship Problem Questionnaire (RPQ; Minnis et al., 2002; Vervoort et al., 2013). Completed by the caregiver, this 10-item questionnaire measures the symptoms of inhibited and disinhibited RAD based on the *DSM-IV* (APA, 1994) diagnostic criteria and their *ICD-10* (World Health Organization, 1992) counterparts. It breaks down into two scales: RAD (six items) and DSED (four items; Vervoort et al., 2013). The RPQ is designed as a short screening tool and is not recommended for estimating AD prevalence or for clinical diagnosis (Minnis et al., 2013). To date, it is the instrument most widely used in research to measure AD symptoms.

RAD and DSED Assessment (RADA) Interview. The RADA interview (Lehmann et al., 2018) is a revised version of the CAPA-RAD interview (Minnis et al., 2009) updated to reflect the *DSM-5* criteria. It comprises a DSED scale (9 items) and a RAD scale (11 items). It may be administered to caregivers in an online version or as a face-to-face, semistructured interview. Each item comprises two to five questions to investigate behavior in depth. In the semistructured interview version that we used, based on the caregiver’s report of the child’s behavior, the evaluator rates each item on a scale of 0 (*symptom not present*), 1

(*symptom somewhat present, but not clinical*) or 2 (*symptom definitively present, clinical level*). In this study, the RADA interview showed very good internal consistency (McDonald's ω of .86 for the RAD scale and of .85 for the DSED scale). Our data also suggest very good interrater agreement: The intraclass correlation for 40 double-coded cases was .90 for the RAD scale and .95 for the DSED scale. Also, interrater agreement for each individual item (clinical = 2 vs. nonclinical = 0 or 1) was very good, as all items (except for one item at 88%) showing 90% or more interrater agreement. Due to time and resource constraints, we collected data using RADA only from a portion of our total sample ($n = 127$: 42 children from the community, 30 children in foster care, and 55 children in residential care). We then used the score on specific RADA items to classify children according to a *DSM-5* based algorithm, to test for known-group validity. Fourteen children met the criteria for DSED only (4 in foster care, 9 in residential care), four met the criteria for RAD only (4 in residential care), and two met the criteria for both RAD and DSED (2 in residential care).

Barkley Functional Impairment Scale for Children and Adolescents (BFIS-CA). The BFIS-CA (Barkley, 2012) is a caregiver-report questionnaire used to assess severity of children's functional impairment in different settings (e.g., at home, at school, with peers). Rated on a 10-point Likert-type scale, its 15 items depict children's behaviors in various daily activities.

Procedure

Informed consent was obtained from all participating caregivers (biological parents, adoptive parents, foster parents, child care workers). Data collection took place between 2016 and 2018. Children with an ASD, as per caregiver report, were excluded from analyses, because RAD and ASD show some symptomatic similarity (ASD is an exclusionary diagnosis for RAD in *DSM-5*) and also because some studies indicate that children with ASD can score high on some AD measures (Davidson et al., 2015). For the community group, a contact was established with an administrator at each participating elementary school, who emailed parents to invite them to participate in the research project. Schools were offered 5.00\$CAN (around 3.50\$US) per parent recruited, up to a maximum of 400.00\$CAN per school. For the RISK group, children had to be living in the same residential setting or adoptive/foster family and with the same caregiver for at least 6 months. Adoptive parents were approached through the administrator of community support groups, and foster parents and residential care child care workers were approached through CPS practitioners. In addition, only a portion of the COM and RISK groups completed the RADA interview and the BFIS-CA ($n = 128$)

and the ETRADQ retest ($n = 163$) in order to maximize the total sample of ETRADQ (ETRADQ takes about 7 minutes to complete, whereas RADA interview can easily take an hour). Also, because they were recruited as part of a prior smaller pilot project, adoptive parents only completed the ETRADQ and the sociodemographic questionnaire. Gift cards worth 100.00\$CAN were distributed at random among participating foster parents at time of interview and 25.00\$CAN were offered to residential care child care workers to purchase sports equipment or educational material for their housing units.

Data Analysis Plan

Missing Values. Overall, only 0.09% of the responses to the individual ETRADQ items were missing (33 missing values out of a total 34,566). A nonsignificant Little's MCAR test, $\chi^2(976) = 1041.94$, $p = .07$, revealed that the data were missing completely at random (MCAR). When data are MCAR and only a very small portion of data is missing (e.g., less than 5% overall), a single imputation using the expectation maximization algorithm provides unbiased parameter estimates and improves statistical power of analyses (Enders, 2001; Scheffer, 2002). Missing data were imputed using the Missing Values Analysis function of IBM SPSS Statistic 21.0. CFA was performed using *Mplus* (version 8.2; Muthén & Muthén, 1998-2017), and McDonald's ω (internal consistency) were computed using JASP (JASP Team, 2020). The CFA models were examined using ETRADQ data from the overall sample ($n = 823$) provided by caregivers of children 5 to 12. The CFA models were estimated using a robust diagonally weighted least squares mean and variance adjusted (WLSMV) with DELTA parameterization to account for the multivariate nonnormality and the categorical data (ordinal data with four options).

CFA: Model Comparison. For the overall sample ($n = 823$), the COM group ($n = 578$) and the RISK group ($n = 245$), CFA was used to test five factor models (see Figure 1). Model 1 comprised a single general AD factor. Model 2 comprised two factors: RAD and DSED. Model 3 comprised three factors (RAD symptom Cluster A, RAD symptom Cluster B, DSED), as was found also by Lehmann et al. (2018). Model 4 comprised four factors replicating *DSM-5* symptom clusters (RAD symptom Cluster A, RAD symptom Cluster B, DSED symptom cluster A, DSED symptom Cluster B). Model 5 was the ETRADQ hypothetical model, which was almost identical to Model 4, except that the items measuring RAD Criterion B3 formed a separate subscale (*Emotional unpredictability*) from the items measuring Criteria B1 and B2 (*Low social and emotional responsiveness*). This subscale (*Emotional unpredictability*) was added because we hypothesized that RAD Criterion B3 "episodes of unexplained irritability,

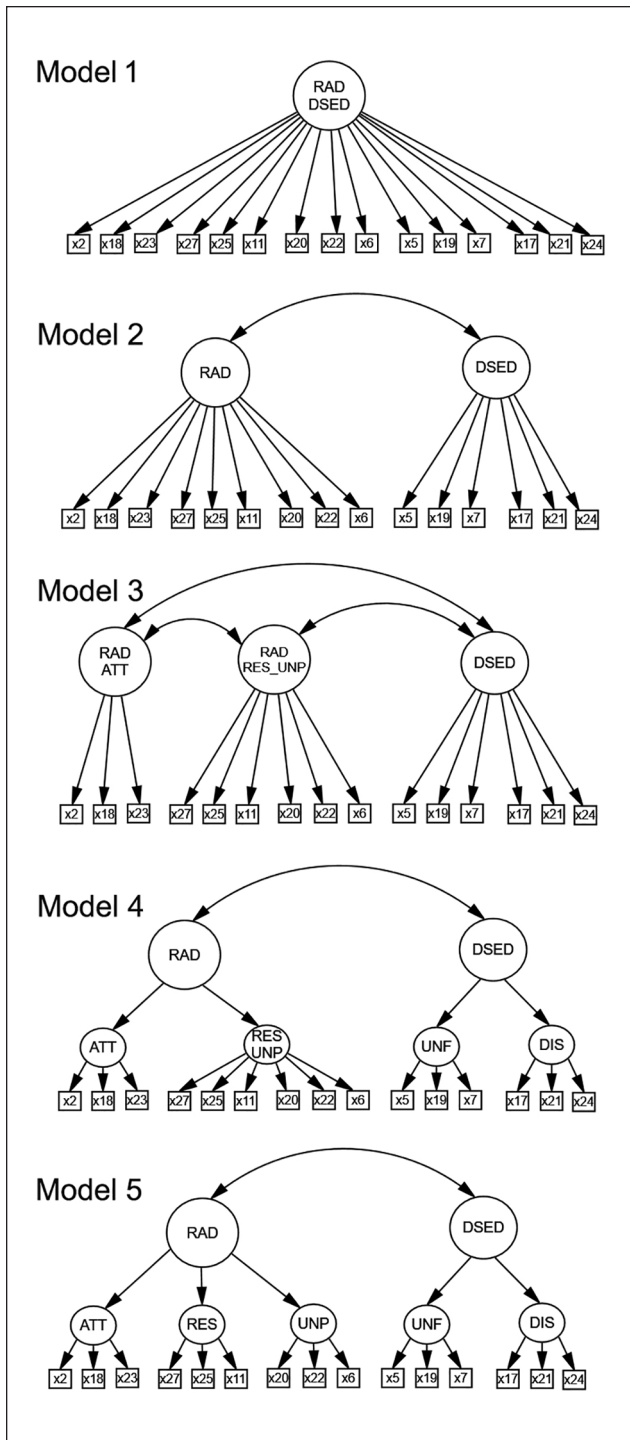


Figure 1. Illustration of the five models subjected to CFA. Note. To simplify the presentation, only the first three items of each subscale of Model 5 are shown (each subscale comprises eight or nine items) and the error terms are not shown. CFA = confirmatory factor analysis; RAD = reactive attachment disorder; DSED = disinhibited social engagement disorder; ATT = Low selective attachment; RES = Low social and emotional responsiveness; UNP = Emotional unpredictability; UNF = Interactions with unfamiliar adults; DIS = Social disinhibition.

sadness, or fearfulness that are evident even during non-threatening interaction with adult caregivers” was qualitatively different from the two other Cluster B criteria, that is, B1 “minimal social and emotional responsiveness to other” and B2 “limited positive affect.” Model fit was evaluated using standard fit indices (Jackson et al., 2009): chi-squared (χ^2), comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). The recommended cutoffs for good fit are .95 or greater for CFI (.90 or greater is sometimes referred to as an acceptable fit), .95 or greater for TLI (.90 or greater is sometimes referred to as an acceptable fit), .06 or lower for RMSEA (.08 or lower is sometimes referred to as an acceptable fit), and .08 or lower for SRMR (Hu & Bentler, 1999; West et al., 2012). When a WLSMV estimator is used, as the difference in χ^2 for nested models is not distributed as χ^2 , it is necessary to use the DIFFTEST option of the SAVEDATA command in *Mplus* to calculate the difference in χ^2 between models. If the difference between two nested models is significant, then they are not equivalent across groups.

CFA: Model Invariance. Once the best-fitting model was determined, its invariance was tested between groups (RISK vs. COM), as its structure could differ in these given the much higher prevalence of AD and psychopathology in general in the RISK group. Model invariance was tested also between the sexes (boys vs. girls) because empirical studies have shown that attachment differences emerge between boys and girls at school age (see Del Giudice, 2019, for a review) and we wished to verify whether these differences had an influence on the factorial structure of the questionnaire.

We followed the outline proposed by Muthén and Muthén (2017) to test a series of increasingly restrictive models, with some variations to account for special circumstances of measurement invariance of a second-order structure (Byrne & Stewart, 2006; Chen et al., 2005). We first tested configural invariance or whether the same items were indicators of the same factor across groups. This step is designed to test whether the constructs have the same pattern of free and fixed loadings (e.g., those that are estimated by the model and those that are fixed at zero across groups). In the second step, we tested for metric invariance of the first- and second-order factor loadings to verify whether each item contributed to the first-order latent constructs to a similar degree across groups (first-order factor loadings), and whether the first-order factor contributed to the second-order latent constructs to a similar degree across groups (second-order factor loading). Third, we tested for scalar invariance. In this step, the thresholds (ordinal variables) were constrained to be equal

Table 2. Sociodemographic Characteristics of Groups.

Variable	Community group (n = 578), n (%)	RISK group (n = 245)				Statistic
		Adoption (n = 98), n (%)	FC (n = 83), n (%)	RC (n = 64), n (%)	Total at-risk (n = 245), n (%) or M (SD)	
Child sex	578	98	83	64	245	$\chi^2(1) = .32$
Boy	306 (53%)	54%	59%	58%	139 (57%)	
Girl	272 (47%)	46%	41%	42%	106 (43%)	
Mean age in years (SD)	7.99 (1.99)	8.62 (2.31)	8.36 (2.35)	9.50 (1.68)	8.73 (2.17)	$t(821) = 4.74^*$
Caregiver relation to child						
Mother	404 (70%)	—	—	—	—	
Father	168 (29%)	—	—	—	—	
Other	6 (1%)	—	—	—	—	
Caregiver education						
No diploma	14 (2%)	—	—	—	—	
High school diploma	90 (16%)	—	—	—	—	
Technical diploma	152 (26%)	—	—	—	—	
University diploma	322 (56%)	—	—	—	—	
Caregiver born in Canada						
Yes	506 (87%)	—	—	—	—	
No	73 (13%)	—	—	—	—	
Child with AD diagnosis (based on caregiver report)						$\chi^2(1) = 171.71^{***}$
Yes	2 (0%)	23 (24%)	25 (30%)	22 (34%)	70 (29%)	
No	576 (100%)	75 (76%)	58 (70%)	42 (66%)	175 (71%)	
Mean placement duration in years (SD)	—	5.82 (2.66)	2.98 (2.41)	1.29 (.99)	3.40 (2.84)	

Note. FC = foster care; RC = residential care; AD = Attachment disorder.
 $***p < .001$.

across groups. Measurement invariance was evaluated using multiple criteria, according to recent guidelines (Putnick & Bornstein, 2016). Significant change in χ^2 for two nested models is reported, as are other criteria such as ΔCFI , ΔTLI , $\Delta RMSEA$, and $\Delta SRMR$ for nested models. Putnick and Bornstein (2016) indicated that experts sometimes suggested different cutoffs for the same GFI. For example, a change of .01 to .002 has been proposed for ΔCFI ; .015 to .030 for $\Delta RMSEA$; and .030 for $\Delta SRMR$. As there is no consensus regarding these cutoffs, we opted for the most conservative values possible: .002 for ΔCFI , .015 for $\Delta RMSEA$, and .030 for $\Delta SRMR$. Additional research material (e.g., *Mplus* syntax for models) are available on the Open Science Framework account of the first author.

Results

Descriptive Statistics

As shown in Table 2, children in the RISK group (adoption, foster or residential care) were slightly older than those in the COM group, $M_{COM} = 7.99$ years, $M_{RISK} = 8.73$ years, $t(821) = 4.74$, $p < .05$. However, the proportion of boys in the two groups was similar. COM = 53%, RISK = 57%, $\chi^2(1) = .32$, n.s.. Proportionally speaking, far more

children in the RISK group had been diagnosed with AD (physician's or psychologist's diagnosis reported by caregiver), compared with those in the COM group, RISK = 31%, COM = 0.003%, $\chi^2(1) = 171.71$, $p < .0001$. Though the rate for the RISK group might seem very high, it is important to bear in mind that adopted children were recruited through a network of adoptive parents with adoptive children with attachment issues or AD and that this percentage included children with RAD and children with DSED, as caregivers could not determine which disorder their children presented (most diagnoses were made before publication of the French translation of the *DSM-5* in 2016, when RAD encapsulated both RAD and DSED).

Confirmatory Factor Analysis: Model Comparison

Table 3 gives the fit indices for each model tested and for each group. For the overall sample, Model 5 (Model 5a in Table 3), the hierarchical two-factor model with five first-order factors, obtained the best fit indices, $\chi^2(814) = 2399.193$, RMSEA = .049, CFI = .953, TLI = .950, and SRMR = .066. When the models were compared in terms of difference in χ^2 for nested models, model 5a proved superior to the others for the overall sample and for the two groups separately. Based on the factor loadings and

Table 3. Fit Indices for Each Model of Confirmatory Factor Analysis in Overall Sample and Groups.

Model #	Model description	χ^2	df	RMSEA	CFI	TLI	SRMR	$\Delta\chi^2$
<i>Overall sample (n = 823)</i>								
5b	Two second-order factors + five, first-order factors: ETRADQ model (w/o Item 12)	2102.827	774	.046	.959	.957	.061	n.a.
5a	Two second-order factors + five, first-order factors: ETRADQ model	2399.193	814	.049	.953	.950	.066	123.069
4	Two second-order factors + four first-order factors: DSM-5 symptom clusters	2769.431	815	.054	.941	.938	.072	60.691
3	Three first-order factors: Lehmann et al. (2018) model	2996.979	816	.057	.935	.931	.076	51.242
2	Two first-order factors (RAD + DSED)	3120.860	818	.058	.931	.927	.078	284.384
1	One factor (general attachment disorder factor)	7093.992	819	.096	.812	.802	.149	—
<i>Community group (n = 578)</i>								
5b	Two second-order factors + five first-order factors: ETRADQ model (w/o Item 12)	1310.700	775	.035	.959	.957	.078	n.a.
5a	Two second-order factors + five first-order factors: ETRADQ model	1437.548	815	.036	.953	.950	.081	n.a.
4	Two second-order factors + four first-order factors: DSM-5 symptom clusters	1654.576	815	.042	.936	.933	.089	41.580
3	Three first-order factors: Lehmann et al. (2018) model	1764.920	816	.045	.922	.924	.093	12.545
2	Two first-order factors (RAD + DSED)	1773.404	818	.045	.927	.924	.094	207.633
1	One factor (general attachment disorder factor)	4225.364	819	.085	.741	.728	.175	—
<i>At-risk group (n = 245)</i>								
5b	Two second-order factors + five first-order factors: ETRADQ model (w/o Item 12)	1368.398	774	.056	.955	.952	.079	n.a.
5a	Two second-order factors + five first-order factors: ETRADQ model	1556.594	814	.061	.945	.941	.086	49.726
4	Two second-order factors + four first-order factors: DSM-5 symptom clusters	1646.047	816	.064	.938	.935	.089	n.a.
3	Three first-order factors: Lehmann et al. (2018) model	1725.955	816	.067	.932	.928	.092	32.951
2	Two first-order factors (RAD + DSED)	1808.940	818	.070	.926	.922	.095	136.610
1	One factor (general attachment disorder factor)	3542.450	819	.117	.797	.786	.170	—
<i>Good fit cut-off</i>				$\leq .06$	$\geq .95$	$\geq .95$	$\leq .08$	

Note. All χ^2 and $\Delta\chi^2$ significant at $p < .001$; Model comparison was computed with the “DiffTest” command in Mplus, because WLSMV estimation does not allow for direct chi-squared comparison. $\Delta\chi^2$ = difference in χ^2 when compared with model on the line just below. In the community group, for Model 4, the error variance for UNP (unpredictability) was fixed at a low value (0.01); for Models 5a and 5b, the error variance for DIS (social disinhibition) and UNP (unpredictability) was fixed at a low value (0.01) to prevent Mplus from estimating a negative variance. In the at-risk group, for Models 4, 5a and 5b, the error variance for DIS (social disinhibition) was fixed at a low value (0.01) to prevent Mplus from estimating a negative variance. In the overall sample, for Models 4, 5a, and 5b, the variance for the latent variable DIS (social disinhibition) was fixed at a low value (0.01) to prevent Mplus from estimating a negative variance. RAD = Reactive Attachment Disorder; DSED = Disinhibited Social Engagement Disorder; ETRADQ = Early TRAuma-related Disorders Questionnaire; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders—Fifth edition*; df = degrees of freedom; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual; WLSMV = weighted least squares mean and variance adjusted.

the modification indices, we removed Item 12 “Hardly ever refers back to adult caregivers in unknown places (e.g., drifts away without seeking to make visual contact with adult caregivers or without drifting back toward them occasionally)” from Model 5a (but kept it in the questionnaire for future analysis) because of its weak factor loading (.39 for the overall sample) on the DSED *Interaction with unfamiliar adults* factor and because the modification indices suggested that the item was more strongly associated with the RAD *Low selective attachment* factor, whereas it should have measured DSED. We repeated the analyses without Item 12 (Model 5b in Table 3) and

obtained even better fit indices for the overall sample, $\chi^2(774) = 2102.827$, RMSEA = .046, CFI = .959, TLI = .957, and SRMR = .061, and for both groups. Model 5b could not be compared with Model 5a because, as the models were not based on the same observed variables, they could not be nested in one another. For Model 5b, in the overall sample, items showed very strong factor loadings (all $> .60$ and most $> .80$, see Table 4). In addition, the correlation between the two second-order factors (RAD and DSED) proved significant and of moderate magnitude ($r = .60$, $p < .001$). We next tested whether Model 5b was invariant across groups and child sexes.

Table 4. ETRADQ Standardized Factor Loadings (CFA, Overall Sample, $n = 823$).

Item #	ETRADQ items	UNF	DIS	ATT	RES	UNP
7	Little hesitation to interact with unknown adults (A1)	.65				
10	Could easily leave with an unknown adult (A4)	.90				
5	Engages unknown adults in conversation	.76				
13	Overly friendly with unknown adults	.96				
19	Touches/invades unknown adults	.85				
14	Is affectionate with unknown adults	.92				
16	Can place him/herself at risk with unknown adults	.95				
40	Seeks comfort from unknown adults	.78				
9	Overly familiar or intimate manner (A2)		.97			
17	Invades the personal space of others		.81			
21	Shares highly personal or overly intimate information		.74			
24	Offers physical contact		.79			
26	Asks others very personal questions		.85			
30	Demands physical contact		.77			
37	Goes into rooms or areas where he is not supposed to go		.79			
41	Rummages through the personal effects of others		.77			
2	Rarely seeks comfort from caregivers (A1)			.66		
8	Is hard to comfort when offered comfort (A2)			.82		
35	Doesn't allow caregivers to meet his needs for safety			.88		
38	When in distress, mentions nothing to adult caregivers			.81		
18	Does not trust adult caregivers			.81		
42	Is wary of adult caregivers			.93		
31	Does not have a preference for one particular adult			.61		
23	Does not invest much emotionally with caregivers			.90		
1	Demonstrates little emotional reaction (B1)				.92	
29	Neutral affect in the course of social relations				.81	
34	Speaks in a monotone and displays little facial expression				.81	
4	Seems uninterested in interactions (B1)				.84	
39	Is not very open to interacting with others				.81	
27	Displays a closed attitude in exchanges with others				.67	
11	Is rarely joyful or enthusiastic (B2)				.87	
25	Does not really derive any pleasure from social relations				.89	
36	Is rarely in a good mood				.90	
3	Can get angry for no apparent reason (B3)					.84
6	Can become scared for no apparent reason (B3)					.71
15	Can begin to cry for no apparent reason (B3)					.69
22	It is very hard to guess how he will react to events					.85
20	Often ends up "ruining" a good time spent with caregivers					.81
28	Does not react well to compliments					.77
32	Has unpredictable reactions					.88
33	Reacts negatively to comfort					.78
n.a.	Loading on the DSED second-order factor	.87	.99			
n.a.	Loading on the RAD second-order factor			.92	.86	.98

Note. The wording of each item was shortened to fit the table. See ETRADQ in the supplemental material (available online) for the complete formulation of each item. Items in bold were intended to be the closest possible approximation to DSM-5 criteria. Correlation between the two second-order factors (RAD and DSED) = .60, $p < .001$. ETRADQ = Early TRAuma-related Disorders Questionnaire; CFA = confirmatory factor analysis; UNF = interaction with unfamiliar adults; DIS = social disinhibition; ATT = low selective attachment; RES = low social and emotional responsiveness; UNP = emotional unpredictability; RAD = Reactive Attachment Disorder; DSED = Disinhibited Social Engagement Disorder; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders—Fifth edition*.

Confirmatory Factor Analysis: Factorial Invariance of Model 5b Between Groups (RISK vs. COM) and Sexes (Boys vs. Girls)

The best-fitting model, that is, the hierarchical two-factor model with five first-order factors without Item 12 (Model 5b), was then tested for invariance. Fit indices were good (see Table 5) from the configural model to the scalar model for both group invariance models (scalar model: $\chi^2(1669) = 2861.473$, RMSEA = .042, CFI = .954, TLI = .955, and SRMR = .080) and sex invariance models, scalar model: $\chi^2(1669) = 2902.812$, RMSEA = .042, CFI = .963, TLI = .964, and SRMR = .070. Across invariance models, delta- χ^2 suggested that the metric model was significantly different from the configural model and that the scalar model was significantly different from the metric model in terms of both group and sex invariance. On the other hand, Δ RMSEA, Δ CFI, Δ TLI, and Δ SRMR were within the most conservative cutoffs for acceptance of measurement invariance for all model comparisons. Given that difference in χ^2 is overly sensitive to small, unimportant deviations from a “perfect” model in large samples and in large models (Putnick & Bornstein, 2016), we considered that, overall, the results supported the configural, metric and scalar between-group and between-sex invariance of the ETRADQ’s best-fitting model (Model 5b).

Reliability (Internal Consistency and Test–Retest)

Internal consistency analyses conducted on the overall sample ($n = 823$) yielded very high McDonald’s ω coefficients, .88 to .95, for all of the ETRADQ scales (see Table 6). Removing items did not improve internal consistency for any of the scales. Test–retest reliability (1-2 months) assessed on a subsample ($n = 163$: 86 COM, 77 RISK) also proved very good for all of the scales, $r = .83$ to .91.

Convergent Validity

To assess convergent validity, we examined the correlation between the main scales of the ETRADQ and those of the RPQ ($n = 715$, entire sample without adopted children) and the RADA interview ($n = 128$: 44 COM, 84 RISK; see Table 6). Strong correlations emerged between the ETRADQ DSED scale and the DSED scales of the RPQ and the RADA interview, respectively, $r = .89$ and .78. The correlations exceeded .70 as expected for two instruments measuring the same construct using comparable methods (Kazdin, 1998). A strong correlation was also found between the ETRADQ RAD scale and the RAD scales of the RPQ and the RADA interview, respectively, $r = .83$ and .75. The ETRADQ RAD subscales (Low selective attachment, Low social and emotional responsiveness, Emotional unpredictability), too,

proved strongly associated with the RPQ and the RADA interview RAD scales, all $r > .60$, as did the ETRADQ DSED subscales (Interactions with unfamiliar adult, Social disinhibition) with the RPQ and the RADA interview DSED scales, all $r > .76$. Finally, the ETRADQ scales and subscales, in particular the RAD scales/subscales, $r = .54$ to .70 compared with $r = .19$ to .35 for the DSED scales/subscales, were all positively correlated with the BFIS-CA global score measuring functional impairment. This suggested that the RAD and DSED symptoms were associated with functional impairment in everyday life.

Known-Group Validity

The ETRADQ’s known-group validity was investigated using two complementary methods. First, we compared children with an AD diagnosis against children without. Nonparametric tests were used owing to the nonnormal distribution (positive skewness) of the data. More specifically, we used the Kruskal–Wallis and the Mann–Whitney tests (see Table 7) to compare three groups of children: (1) COM children ($n = 578$); (2) RISK children without an AD diagnosis (RISK w/o AD, $n = 176$); and (3) RISK children with an AD diagnosis formulated by an accredited professional, as per caregiver report (RISK with AD, $n = 69$). For the RAD scale, the Kruskal–Wallis test revealed a significant group difference, $\chi^2(2) = 173.15$, $p < .001$, $\eta^2 = .21$. Post hoc group comparisons showed that COM children presented fewer RAD symptoms than did RISK children without a diagnosis, Mann–Whitney $U = 30721.00$, $p < .001$, effect size $\eta^2 = .08$. Children with an AD diagnosis presented more RAD symptoms than did COM children, Mann–Whitney $U = 3177.00$, $p < .001$, effect size $\eta^2 = .20$, or RISK children without a diagnosis, Mann–Whitney $U = 2914.50$, $p < .001$, effect size $\eta^2 = .16$. For the DSED scale, the Kruskal–Wallis test revealed a significant group difference, $\chi^2(2) = 110.69$, $p < .001$, $\eta^2 = .13$. Post hoc group comparisons showed that COM children presented fewer DSED symptoms than did RISK children without an AD diagnosis, Mann–Whitney $U = 34032.50$, $p < .001$, $\eta^2 = .06$. RISK children with a diagnosis presented more DSED symptoms than did COM children, Mann–Whitney $U = 6852.50$, $p < .001$, $\eta^2 = .12$, or RISK children without a diagnosis, Mann–Whitney $U = 3662.50$, $p < .001$, $\eta^2 = .10$.

Then, because the diagnoses made by professionals did not distinguish between children with RAD and those with DSED, we created four groups based on the results of the RADA interview (see method section): children from the community ($n = 42$), children at risk ($n = 64$, foster care or residential care), children with likely RAD ($n = 4$), and children with likely DSED ($n = 14$). Two children with both RAD and DSED classification were not included. We used the Kruskal–Wallis and the Mann–Whitney tests (see

Table 5. Fit Indices for Measurement Invariance Tests of Model 5b.

Model #	Invariance model	Overall fit indices						Model comparison fit						Decision	
		χ^2	df	RMSEA	CFI	TLI	SRMR	Model comparison	$\Delta\chi^2$	Δdf	p	$\Delta RMSEA$	ΔCFI		ΔTLI
<i>Invariance for groups (comparing community group, n = 578, and at-risk group, n = 245)</i>															
1	Configural model	2678.152	1550	.042	.956	.954	.078	—	—	—	—	—	—	—	—
2	Metric model	2768.511	1592	.042	.955	.953	.079	1 vs. 2	144.414	42	.000	.001	.001	.001	.001
3	Scalar model	2861.473	1669	.042	.954	.955	.080	2 vs. 3	173.700	77	.000	.001	.002	.001	.001
<i>Invariance for sexes (comparing boys, n = 445, and girls, n = 378)</i>															
1	Configural model	2789.928	1550	.044	.963	.961	.069	—	—	—	—	—	—	—	—
2	Metric model	2856.294	1592	.044	.963	.961	.070	1 vs. 2	107.047	42	.000	.000	.000	.000	.001
3	Scalar model	2902.812	1669	.042	.963	.964	.070	2 vs. 3	120.404	77	.001	.000	.003	.000	.000
<i>Good fit cutoff</i>				$\leq .06$	$\geq .95$	$\geq .95$	$\leq .08$	<i>Noninvariance cutoff</i>	—	—	$\leq .05$	$\geq .015$	$\geq .002$	$\geq .01$	$\geq .03$

Note. df = degrees of freedom; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual.

Table 6. Reliability and Validity Indices for ETRADQ Scales and Subscales.

ETRADQ scales and subscales	Reliability		Convergent validity				
	McDonald's ω [95% CI]	Test-retest (2 Months)	RPQ; RAD scale	RADA; RAD scale	RPQ; DSED scale	RADA; DSED scale	BFIS-CA; Global score
ETRADQ RAD scale (25 items)	.95 [.95, .96]	.90**	.83**	.75**	.39**	.46**	.70**
Low selective attachment (8 items)	.89 [.88, .90]	.83**	.74**	.74**	.31**	.35**	.65**
Low social-emotional responsiveness (9 items)	.91 [.90, .92]	.87**	.72**	.63**	.29**	.33**	.64**
Emotional unpredictability (8 items)	.89 [.87, .89]	.85**	.79**	.60**	.42**	.35**	.54**
ETRADQ DSED scale (16 items)	.94 [.93, .94]	.91**	.54**	.17	.89**	.78**	.29**
Interactions with unfamiliar adults (8 items)	.91 [.90, .92]	.88**	.45**	.10	.88**	.68**	.19*
Social disinhibition (8 items)	.88 [.87, .90]	.89**	.57**	.21*	.80**	.76**	.35**

Note. $n = 823$ for internal consistency (McDonald's ω), $n = 715$ for correlation between ETRADQ and RPQ, $n = 128$ for correlation between ETRADQ and RADA interview and also BFIS-CA, $n = 163$ for test-retest. Correlations concerning convergent validity are in bold (same constructs). ETRADQ = Early TRAuma-related Disorders Questionnaire; CI = confidence interval; RPQ = Relationship Problem Questionnaire; RAD = Reactive Attachment Disorder; RADA = RAD and DSED Assessment; DSED = Disinhibited Social Engagement Disorder; BFIS-CA = Barkley Functional Impairment Scale for Children and Adolescents.

* $p < .05$. ** $p < .01$.

Table 7. Group Comparisons on ETRADQ Scales Based on AD Diagnosis Reported by the Caregiver (Total Sample, $n = 823$).

ETRADQ scales	COM ($n = 578$), M (SD)	RISK w/o AD ($n = 176$), M (SD)	RISK with AD ($n = 69$), M (SD)	Kruskal-Wallis H, χ^2	η^2	Post hoc; Mann-Whitney U
RAD scale	6.88 (8.11)	16.10 (14.98)	31.26 (17.08)	173.15***	.21	COM < RISK w/o AD < RISK with AD
DSED scale	5.81 (7.39)	10.69 (9.97)	19.33 (13.32)	110.69***	.13	COM < RISK w/o AD < RISK with AD

Note. RAD scale, sum of the 25 items of the ETRADQ RAD scale (range 0-75); DSED scale, sum of the 16 items of the ETRADQ DSED scale (range 0-48); COM, community group; RISK with AD, children in the at-risk group with an AD diagnosis established by a physician or psychologist (as reported by caregiver); RISK w/o AD, children in the at-risk group without an AD diagnosis. ETRADQ = Early TRAuma-related Disorders Questionnaire; RAD = Reactive Attachment Disorder; DSED = Disinhibited Social Engagement Disorder; AD = Attachment disorder; COM = community; RISK = at-risk.

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

Table 8. Group Comparisons on ETRADQ Scales Based on Likely Diagnosis of RAD and DSED Based on the RADA Interview ($n = 125$).

ETRADQ scales	COM ($n = 42$) M (SD)	RISK ($n = 65$) M (SD)	RISK with likely DSED ($n = 14$) M (SD)	RISK with likely RAD ($n = 4$) M (SD)	Kruskal-Wallis H χ^2	η^2	Post hoc Mann-Whitney U
RAD scale	6.57 (7.22)	17.44 (12.50)	20.82 (14.84)	37.25 (8.57)	33.42***	.24	COM < RISK = DSED < RAD
DSED scale	6.38 (6.86)	8.38 (7.50)	24.20 (9.88)	9.50 (6.40)	29.56***	.22	COM = RISK = RAD < DSED

Note. RAD scale, sum of the 25 items of the ETRADQ RAD scale (range 0-75); DSED scale, sum of the 16 items of the ETRADQ DSED scale (range 0-48); RISK with likely DSED, children fulfilling DSM-5 criteria on the RADA interview for DSED, RISK with likely RAD, children fulfilling DSM-5 criteria on the RADA interview for RAD. The two children meeting both RAD and DSED criteria are not included. ETRADQ = Early TRAuma-related Disorders Questionnaire; RAD = Reactive Attachment Disorder; DSED = Disinhibited Social Engagement Disorder; RADA = RAD and DSED Assessment; DSM-5 = Diagnostic and Statistical Manual of Mental Disorders-Fifth edition; COM = community; RISK = at-risk.

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

Table 8) to compare these four groups of children. For the RAD scale, the Kruskal-Wallis test revealed a significant group difference, $\chi^2(3) = 33.42$, $p < .001$, effect size $\eta^2 = .24$. Post hoc group comparisons showed that COM children presented fewer RAD symptoms than did RISK

children without a diagnosis, Mann-Whitney $U = 637.000$, $p < .001$, effect size $\eta^2 = .20$. Children with a likely DSED diagnosis did not differ from RISK children, Mann-Whitney $U = 415.000$, $p = .37$. Children with a likely RAD diagnosis presented more RAD symptoms than did

children with a likely DSED diagnosis, Mann–Whitney $U = 10.000$, $p < .05$, effect size $\eta^2 = .21$. For the DSED scale, the Kruskal–Wallis test revealed a significant group difference, $\chi^2(3) = 29.56$, $p < .001$, effect size $\eta^2 = .22$. Post hoc group comparisons showed that COM children did not differ from RISK children without a diagnosis, Mann–Whitney $U = 1112.000$, $p = .105$. Children with a likely RAD diagnosis did not differ from RISK children, Mann–Whitney $U = 106.500$, $p = .56$. Children with a likely DSED diagnosis presented more DSED symptoms than did children with a likely RAD, Mann–Whitney $U = 5.000$, $p < .01$, effect size $\eta^2 = .33$.

Discussion

The aim of this study was to validate the ETRADQ, a caregiver-report instrument for assessing RAD and DSED symptoms as defined under the *DSM-5* in school-age children. The study was conducted in a large sample of children 5 to 12 years old drawn from the community ($n = 578$) and from an at-risk population ($n = 245$). The ETRADQ presents a number of strong points that mark an advance in the field of attachment disorders research and assessment. It is the first questionnaire to cover all of the symptoms listed in the *DSM-5* for RAD and DSED. It is also the only instrument of its kind to have been subjected to a complete validation process. Leaders in the field of AD and the American Academy of Child and Adolescent Psychiatry have proposed guidelines for the assessment of RAD and DSED. Their first recommendation is:

For young children with a history of foster care, adoption, or institutional rearing, clinicians should inquire routinely about (a) whether the child demonstrates attachment behaviors and (b) whether the child is reticent with strangers. The purpose of screening for RAD and DSED is to determine whether more formal assessment for these disorders is necessary. In the absence of validated screening instruments for RAD and DSED, clinicians should both ask about and observe attachment in the young child directed toward the parent/caregiver. (Zeanah et al., 2016, p. 996)

In this regard, the ETRADQ fills an obvious need in terms of validated screening tools for RAD and DSED.

CFA of the ETRADQ items supported the expected organization of the measure, that is, two second-order factors and five subfactors (Model 5b): (1) a RAD scale with three subscales: *Low selective attachment*, *Low social and emotional responsiveness*, and *Emotional unpredictability*; and (2) a DSED scale with two subscales: *Interactions with unfamiliar adults* and *Social disinhibition*. Factor loadings were generally very strong (all $>.60$ and most $>.80$). The ETRADQ scales and subscales proved strongly correlated with the RPQ and the RADA interview scales, as well as with functional impairment, which clearly supports its convergent validity.

The scale's internal consistency and the test–retest correlations proved very strong as well. Finally, the two main scales distinguished between children with an AD diagnosis and those without an AD diagnosis, based on diagnoses reported by caregivers (diagnosis issued by a health professional in the community) or on our classification based on the *DSM-5* criteria using the RADA interview. Such results support the questionnaire's known-group validity. Another of the ETRADQ's strong suits is that it operationalizes some of the concepts mentioned in the *DSM-5* criteria. For example, for the DSED scale, a child must exhibit “overly familiar verbal or physical behavior” (A2) and “behaviors in Criterion A are not limited to impulsivity (as in attention deficit/hyperactivity disorder) but include socially disinhibited behavior” (B). With its *Social disinhibition* scale, the ETRADQ provides tangible examples of socially disinhibited behaviors toward peers or familiar adults (e.g., offer or request overly personal information, offer or request physical contact). This is an important issue given that social disinhibition is sometimes manifested in other ways than through interactions with unfamiliar adults. This aspect has generally been overlooked by other extant tools.

Our CFA results suggest that the behaviors described in the *DSM-5* RAD Criterion B3, “episodes of unexplained irritability, sadness, or fearfulness that are evident even during nonthreatening interactions with adult caregivers” are separable from those described in criteria B1 “minimal social and emotional responsiveness to other” and B2 “limited positive affect.” Indeed, the items describing the B3 criterion under the ETRADQ *Emotional unpredictability* scale constitute a factor distinct from the items based on Criteria B1 and B2. We grouped the latter items under the label *Low social and emotional responsiveness*. These emotionally unpredictable behaviors could be the result of posttraumatic symptoms of intrusion surging when interacting with current caregivers, whereas the *Low social and emotional responsive* behaviors might correspond to a form of relational avoidance tied to early traumatic parent–child interactions. The CFA also showed that, in both the COM and the RISK groups, Item 12 “Hardly ever refers back to adult caregivers in unknown places (e.g., drifts away without seeking to make visual contact with adult caregivers or without drifting back toward them occasionally),” which was designed to reflect DSED criterion A3 “diminished or absent checking back with adult caregiver after venturing away, even in unfamiliar setting,” was more strongly associated with items in the RAD *Low selective attachment* subscale than with the DSED *Interaction with unfamiliar adults* factor. Though this finding might seem surprising at first glance, Dobrova-Krol et al. (2010) and Pears et al. (2010) both reported similar results regarding this DSED criterion. In fact, this is the only DSED criterion that refers explicitly to how a child behaves toward caregivers. This may explain why this criterion is more strongly associated with RAD symptoms.

Our study is not without limitations. Above all, the ETRADQ's questionnaire format is exposed to potential problems of informant reliability. Indeed, the questionnaire was not validated with maltreating parents. In this regard, though the instrument demonstrated good psychometric properties for detecting AD symptoms in adopted children and in children in out-of-home care (foster care and residential care), future research will be required to establish whether it has the same psychometric properties with maltreating parents. It has been documented that certain characteristics (e.g., psychopathology, harsh discipline, family dysfunction, low socioeconomic level) often found among maltreating parents are associated with a distorted or biased perception of their children (Müller & Furniss, 2013; Ringoot et al., 2015). This could potentially bias the results of the ETRADQ. Furthermore, maltreating parents might be reluctant to report RAD symptoms in their children owing to a social desirability effect if they sense, implicitly or explicitly, that their children's RAD behaviors might be caused by their own parental shortcomings. In addition, some child behaviors might be harder for caregivers to appreciate, including attachment behaviors toward caregivers. The meta-analyses by van Ijzendoorn et al. (2004) and by Cadman et al. (2018) of the validity of the Attachment Q-Sort suggested in this regard that caregivers were less capable than external observers of providing a valid attachment profile of a child. If this is so, some of the ETRADQ scales more strongly associated with the attachment construct, such as the *Low selective attachment* scale, might be less reliable or valid, depending on the informant. Given that fully or partially validated observational measures already exist to assess DSED, such as the Waiting Room Observation (McLaughlin et al., 2010), the Stranger at the Door procedure (Gleason et al., 2014), and the Observed DSE (Lawler et al., 2016), developing and validating an observation tool for measuring RAD should be a top priority in the field (see Corval et al., 2019; Zimmermann & Iwanski, 2019, for two very recent RAD observation tools).

In conclusion, evidence from this study contributes to validate the ETRADQ and supports the use of this measure by clinicians and researchers for screening purposes and for the purpose of psychological or psychiatric assessment. In addition, the ETRADQ can also be used as part of a complete diagnostic process, provided that data are also gathered from interviews and direct observation of the child in the presence of both caregivers and unfamiliar adults, as recommended by experts in the field (Zeanah et al., 2016).

Acknowledgments

We would like to thank all the adoptive parents, foster parents, child care workers, and biological parents who participated in this study.

Author Note

Sophie Couture is currently affiliated with Université Sherbrooke Montreal, Québec, Canada.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project was funded by the Institut Universitaire Jeunes en Difficulté (IUJD) of the CIUSSS Centre-Sud-de-l'île-de-Montréal.

ORCID iD

Sebastien Monette  <https://orcid.org/0000-0003-4422-1780>

Supplemental Material

Supplemental material for this article is available online.

References

- Allen, B. (2018). Misperceptions of reactive attachment disorder persist: Poor methods and unsupported conclusions. *Research in Developmental Disabilities, 77*(June), 24-29. <https://doi.org/10.1016/j.ridd.2018.03.012>
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Author.
- Atkinson, L. (2019). Reactive attachment disorder and attachment theory from infancy to adolescence: Review, integration, and expansion. *Attachment & Human Development, 21*(2), 205-217. <https://doi.org/10.1080/14616734.2018.1499214>
- Barkley, R. A. (2012). *Barkley Functional Impairment Scale for children and adolescents*. Guilford Press.
- Blunch, N. J. (2013). *Introduction to structural equation modeling using SPSS and Amos*. Sage.
- Boris, N. W., Zeanah, C. H., Larrieu, J. A., Scheeringa, M. S., & Heller, S. (1998). Attachment disorders in infancy and early childhood: A preliminary investigation of diagnostic criteria. *American Journal of Psychiatry, 155*(2), 295-297. <https://doi.org/10.1176/ajp.155.2.295>
- Bruce, M., Young, D., Turnbull, S., Rooksby, M., Chadwick, G., Oates, C., Nelson, R., Young-Southward, G., Haig, C., & Minnis, H. (2019). Reactive attachment disorder in maltreated young children in foster care. *Attachment & Human Development, 21*(2), 152-169. <https://doi.org/10.1080/14616734.2018.1499211>
- Byrne, B. M., & Stewart, S. M. (2006). Teacher's Corner: The MACS approach to testing for multigroup invariance of a second-order Structure: A walk through the process. *Structural Equation Modeling: A Multidisciplinary Journal, 13*(2), 287-32. https://doi.org/10.1207/s15328007sem1302_7

- Cadman, T., Diamond, P. R., & Fearon, P. (2018). Reassessing the validity of the Attachment Q-Sort: An updated meta-analysis. *Infant and Child Development, 27*(1), e2034. <https://doi.org/10.1002/icd.2034>
- Chen, F. F., Sousa, K. H., & West, S. G. (2005). Teacher's corner: testing measurement invariance of second-order factor models. *Structural Equation Modeling: A Multidisciplinary Journal, 12*(3), 471–492. https://doi.org/10.1207/s15328007sem1203_7
- Corval, R., Belsky, J., Baptista, J., Mesquita, A., & Soares, I. (2019). Development and validation of an observational measure of symptoms of reactive attachment disorder. *Attachment & Human Development, 21*(2), 111–131. <https://doi.org/10.1080/14616734.2018.1499209>
- Davidson, C., O'Hare, A., Mactaggart, F., Green, J., Young, D., Gillberg, C., & Minnis, H. (2015). Social relationship difficulties in autism and reactive attachment disorder: Improving diagnostic validity through structured assessment. *Research in Developmental Disabilities, 40*(May), 63–72. <https://doi.org/10.1016/j.ridd.2015.01.007>
- Del Giudice, M. (2019). Sex differences in attachment styles. *Current Opinion in Psychology, 25*(February), 1–5. <https://doi.org/10.1016/j.copsyc.2018.02.004>
- Dobrova-Krol, N. A., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., & Juffer, F. (2010). The importance of quality of care: Effects of perinatal HIV infection and early institutional rearing on preschoolers' attachment and indiscriminate friendliness. *Journal of Child Psychology and Psychiatry, 51*(12), 1368–1376. <https://doi.org/10.1111/j.1469-7610.2010.02243.x>
- Enders, C. K. (2001). A primer on maximum likelihood algorithms available for use with missing data. *Structural Equation Modeling, 8*(1), 128–141. https://doi.org/10.1207/S15328007SEM0801_7
- Gleason, M. M., Fox, N. A., Drury, S. S., Smyke, A. T., Nelson, C. A., & Zeanah, C. H. (2014). Indiscriminate behaviors in previously institutionalized young children. *Pediatrics, 133*(3), e657–e665. <https://doi.org/10.1542/peds.2013-0212>
- Hall, S. E. K., & Geher, G. (2003). Behavioral and personality characteristics of children with reactive attachment disorder. *Journal of Psychology, 137*(2), 145–162. <https://doi.org/10.1080/00223980309600605>
- Hanson, R. F., & Spratt, E. G. (2000). Reactive attachment disorder: What we know about the disorder and implication for treatment. *Child Maltreatment, 5*(2), 137–145.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Jackson, D. L., Gillaspay, J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods, 14*(1), 6–23. <https://doi.org/10.1037/a0014694>
- JASP Team. (2020). *JASP (Version 0.13.1)* [Computer software]. <https://jasp-stats.org/2020/07/21/jasp-0-13-1-small-fixes/>
- Jonkman, C. S., Oosterman, M., Schuengel, C., Bolle, E. A., Boer, F., & Lindauer, R. J. (2014). Disturbances in attachment: Inhibited and disinhibited symptoms in foster children. *Child and Adolescent Psychiatry and Mental Health, 8*, Article 21. <https://doi.org/10.1186/1753-2000-8-21>
- Kay, C., & Green, J. (2013). Reactive attachment disorder following early maltreatment: Systematic evidence beyond the institution. *Journal of Abnormal Child Psychology, 41*(4), 571–581. <https://doi.org/10.1007/s10802-012-9705-9>
- Kay, C., Green, J., & Sharma, K. (2016). Disinhibited attachment disorder in UK adopted children during middle childhood: Prevalence, validity and possible developmental origin. *Journal of Abnormal Child Psychology, 44*(7), 1375–1386. <https://doi.org/10.1007/s10802-016-0131-2>
- Kazdin, A. E. (1998). *Research design in clinical psychology* (3rd ed.). Allyn & Bacon.
- Kliewer-Neumann, J. D., Zimmermann, J., Bovenschen, I., Gabler, S., Lang, K., Spangler, G., & Nowacki, K. (2018). Assessment of attachment disorder symptoms in foster children: Comparing diagnostic assessment tools. *Child and Adolescent Psychiatry and Mental Health, 12*, Article 43. <https://doi.org/10.1186/s13034-018-0250-3>
- Kočovská, E., Puckering, C., Follan, M., Smillie, M., Gorski, C., Barnes, J., Wilson, P., Young, D., Lidstone, E., Pritchett, R., Hockday, H., & Minnis, H. (2012). Neurodevelopmental problems in maltreated children referred with indiscriminate friendliness. *Research in Developmental Disabilities, 33*(5), 1560–1565. <https://doi.org/10.1016/j.ridd.2012.02.016>
- Lalande, C., Cyr, C., Dubois-Comtois, K., Losier, V., Paquette, D., & Emery, J. (2014). Les comportements d'attachement indiscriminé chez les enfants de mères adolescentes: Étiologie et facteurs de risque [Indiscriminate attachment behavior among infants of adolescent mothers: Etiology and risk factors.]. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement, 46*(2), 73–83. <https://doi.org/10.1037/a0027426>
- Lawler, J. M., Koss, K. J., Doyle, C. M., & Gunnar, M. R. (2016). The course of early disinhibited social engagement among post-institutionalized adopted children. *Journal of Child Psychology and Psychiatry, 57*(10), 1126–1134. <https://doi.org/10.1111/jcpp.12606>
- Lehmann, S., Breivik, K., Heiervang, E. R., Havik, T., & Havik, O. E. (2016). Reactive attachment disorder and disinhibited social engagement disorder in school-aged foster children: A confirmatory approach to dimensional measures. *Journal of Abnormal Child Psychology, 44*(3), 445–457. <https://doi.org/10.1007/s10802-015-0045-4>
- Lehmann, S., Havik, O. E., Havik, T., & Heiervang, E. R. (2013). Mental disorders in foster children: A study of prevalence, comorbidity and risk factors. *Child and Adolescent Psychiatry and Mental Health, 7*, Article 39. <https://doi.org/10.1186/1753-2000-7-39>
- Lehmann, S., Monette, S., Egger, H., Breivik, K., Young, D., Davidson, C., & Minnis, H. (2018). Development and examination of the reactive attachment disorder and disinhibited social engagement disorder assessment interview. *Assessment, 27*(4), 749–765. <https://doi.org/10.1177/1073191118797422>
- McLaughlin, A., Espie, C., & Minnis, H. (2010). Development of a brief waiting room observation for behaviours typical of reactive attachment disorder. *Child and Adolescent Mental Health, 15*(2), 73–79. <https://doi.org/10.1111/j.1475-3588.2009.00549.x>

- Minnis, H., Green, J., O'Connor, T. G., Liew, A., Glaser, D., Taylor, E., Follan, M., Young, D., Barnes, J., Gilberg, C., Pelosi, A., Arthur, J., Burston, A., & Sadiq, F. A. (2009). An exploratory study of the association between reactive attachment disorder and attachment narratives in early school-age children. *Journal of Child Psychology and Psychiatry*, *50*(8), 931-942. <https://doi.org/10.1111/j.1469-7610.2009.02075.x>
- Minnis, H., Macmillan, S., Pritchett, R., Young, D., Wallace, B., Butcher, J., Sim, F., Baynham, K., Davidson, C., & Gillberg, C. (2013). Prevalence of reactive attachment disorder in a deprived population. *British Journal of Psychiatry*, *202*(5), 342-346. <https://doi.org/10.1192/bjp.bp.112.114074>
- Minnis, H., Rabe-Hesketh, S., & Wolkind, S. (2002). Development of a brief, clinically relevant, scale for measuring attachment disorders. *International Journal of Methods in Psychiatric Research*, *11*(2), 90-98. <https://doi.org/10.1002/mpr.127>
- Müller, J. M., & Furniss, T. (2013). Correction of distortions in distressed mothers' ratings of their preschool children's psychopathology. *Psychiatry Research*, *210*(1), 294-301. <https://doi.org/10.1016/j.psychres.2013.03.025>
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.
- O'Connor, T. G., Bredenkamp, D., Rutter, M., & The English and Romanian Adoptees (ERA) Study Team. (1999). Attachment disturbances and disorders in children exposed to early severe deprivation. *Infant Mental Health Journal*, *20*(1), 10-29. [https://doi.org/10.1002/\(SICI\)1097-0355\(199921\)20:1<10::AID-IMHJ2>3.0.CO;2-S](https://doi.org/10.1002/(SICI)1097-0355(199921)20:1<10::AID-IMHJ2>3.0.CO;2-S)
- Oosterman, M., & Schuengel, C. (2008). Attachment in foster children associated with caregivers' sensitivity and behavioral problems. *Infant Mental Health Journal*, *29*(6), 609-623. <https://doi.org/10.1002/imhj.20198>
- Pears, K. C., Bruce, J., Fisher, P. A., & Kim, H. K. (2010). Indiscriminate friendliness in maltreated foster children. *Child Maltreatment*, *15*(1), 64-75. <https://doi.org/10.1177/1077559509337891>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, *41*(September), 71-90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Randolph, E. M. (2000). *Manual for the Randolph Attachment Disorder Questionnaire* (3rd ed.). Attachment Center Press.
- Ringoot, A. P., van der Ende, J., Jansen, P. W., Measelle, J. R., Basten, M., So, P., Jaddoe, V. W. V., Hofman, A., Verhulst, F. C., & Tiemeier, H. (2015). Why mothers and young children agree or disagree in their reports of the child's problem behavior. *Child Psychiatry & Human Development*, *46*(6), 913-927. <https://doi.org/10.1007/s10578-014-0531-x>
- Scheffer, J. (2002). Dealing with missing data. *Research Letters in the Information and Mathematical Sciences*, *3*, 153-160. <https://mro.massey.ac.nz/handle/10179/4355>
- Seim, A. R., Jozefiak, T., Wichstrøm, L., & Kaye, N. S. (2019). Validity of reactive attachment disorder and disinhibited social engagement disorder in adolescence. *European Child & Adolescent Psychiatry*. <https://doi.org/10.1007/s00787-019-01456-9>
- Smyke, A. T., Dumitrescu, A., & Zeanah, C. H. (2002). Attachment disturbances in young children. I: The continuum of caretaking casualty. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(8), 972-982. <https://doi.org/10.1097/00004583-200208000-00016>
- Sonuga-Barke, E. J. S., Kennedy, M., Kumsta, R., Knights, N., Golm, D., Rutter, M., Maughan, B., Schlotz, W., & Kreppner, J. (2017). Child-to-adult neurodevelopmental and mental health trajectories after early life deprivation: The young adult follow-up of the longitudinal English and Romanian Adoptees study. *Lancet*, *389*(10078), 1539-1548. [https://doi.org/10.1016/S0140-6736\(17\)30045-4](https://doi.org/10.1016/S0140-6736(17)30045-4)
- van Ijzendoorn, M. H., Vereijken, C. M. J. L., Bakermans-Kranenburg, M. J., & Riksen-Walraven, J. M. (2004). Assessing attachment security with the Attachment Q Sort: Meta-analytic evidence for the validity of the observer AQS. *Child Development*, *75*(4), 1188-1213. <https://doi.org/10.1111/j.1467-8624.2004.00733.x>
- Vervoort, E., De Schipper, J., Bosmans, G., & Verschuere, K. (2013). Screening symptoms of reactive attachment disorder: Evidence for measurement invariance and convergent validity. *International Journal of Methods in Psychiatric Research*, *22*(3), 256-265. <https://doi.org/10.1002/mpr.1395>
- West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209-231). Guilford Press.
- Woolgar, M., & Baldock, E. (2015). Attachment disorders versus more common problems in looked after and adopted children: Comparing community and expert assessments. *Child and Adolescent Mental Health*, *20*(1), 34-40. <https://doi.org/10.1111/camh.12052>
- World Health Organization. (1992). *ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines*. Author.
- Zeanah, C. H., Chesher, T., Boris, N. W., Walter, H. J., Bukstein, O. G., Bellonci, C., Benson, R. C., Bussing, R., Chrisman, A., Hamilton, J., Hayek, M., Keable, H., Rockhill, C., Siegel, M., & Stock, S. (2016). Practice parameter for the assessment and treatment of children and adolescents with reactive attachment disorder and disinhibited social engagement disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, *55*(11), 990-1003. <https://doi.org/10.1016/j.jaac.2016.08.004>
- Zeanah, C. H., & Gleason, M. M. (2015). Annual research review: Attachment disorders in early childhood—clinical presentation, causes, correlates, and treatment. *Journal of Child Psychology and Psychiatry*, *56*(3), 207-222. <https://doi.org/10.1111/jcpp.12347>
- Zeanah, C. H., Humphreys, K. L., Fox, N. A., & Nelson, C. A. (2017). Alternatives for abandoned children: Insights from the Bucharest Early Intervention Project. *Current Opinion in Psychology*, *15*(June), 182-188. <https://doi.org/10.1016/j.copsyc.2017.02.024>
- Zeanah, C. H., Scheeringa, M., Boris, N. W., Heller, S. S., Smyke, A. T., & Trapani, J. (2004). Reactive attachment disorder in maltreated toddlers. *Child Abuse & Neglect*, *28*(8), 877-888. <https://doi.org/10.1016/j.chiabu.2004.01.010>
- Zimmermann, P., & Iwanski, A. (2019). Attachment disorder behavior in early and middle childhood: Associations with children's self-concept and observed signs of negative internal working models. *Attachment & Human Development*, *21*(2), 170-189. <https://doi.org/10.1080/14616734.2018.1499212>