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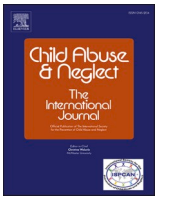

Using the DRS-8 to measure unresolved/disorganized attachment: Associations with states of mind on the adult attachment interview, psychopathology, and offspring social-emotional development

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ABSTRACT

Background: Unresolved/disorganized (U/d) attachment states of mind are associated with poor outcomes across numerous domains of functioning. However, the validity of existing self-report instruments measuring this construct remains questionable.
Objectives: The aim of the current study was to validate the DRS-8, an alternative version of the Disorganized Response Scale (DRS), by assessing its construct validity, internal consistency, and criterion validity with the U/d attachment scales on the Adult Attachment Interview (AAI).
Participants and setting: Date were collected from 222 expectant parents (78 % women) at T1 and from 67 of them at 12 months postpartum (T2).
Methods: Participants completed the DRS-8 and questionnaires assessing childhood trauma, romantic attachment, and psychological symptoms during pregnancy (T1). Seventy-four of them participated in the AAI at T1. At T2, parents completed a questionnaire assessing their infants' social-emotional development.
Results: The DRS-8 has two highly correlated dimensions, i.e., lapses in the monitoring of reasoning (four items) and discourse (four items). A confirmatory factor analysis supported a bifactor structure of the instrument, showing good fit indices and internal consistency ($\omega = 0.87$). The DRS-8 was significantly correlated with U/d states of mind on the AAI, $r(72) = 0.28$, $p = .016$, and demonstrated excellent construct validity. Significant indirect effects of the DRS-8 were found in the associations between childhood trauma and psychological symptoms, and between parental trauma and infant social-emotional development.
Conclusions: The DRS-8 appears to be a promising self-report measure of U/d states of mind showing criterion validity with the AAI.

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1. Introduction

Creating and maintaining intimate emotional bonds with significant others is an important key to healthy human development (Bowlby, 1988; Thompson, 2016). Indeed, the attachment theory stipulates that a complex and innate psychobiological system develops during the first years of life and motivates infants to seek safety and protection in their primary caregivers (Bowlby, 1988; Cassidy, 2016). Confident expectations about their availability and responsiveness promote the development of secure attachment in children, whereas a lack of such confidence, resulting from recurrent unresponsive, rejecting or inconsistent behaviors in caregivers, contributes to the development of insecure attachment (Bowlby, 1988; Cassidy, 2016). Attachment disorganization, which is a severe form of attachment insecurity (Solomon & George, 2016), has been associated with a higher risk of functional impairments and psychopathology during childhood and adolescence (see the reviews by Lyons-Ruth & Jacobvitz, 2016; Stovall-McClough & Dozier, 2016). As disorganized attachment is likely to be an important contributor to public health cost (Lyons-Ruth & Jacobvitz, 2016), more attention has to be paid to developing well-validated and accessible instruments measuring this construct.

Attachment disorganization in adulthood is conceptualized as unintegrated traumatic experience manifested by unresolved/disorganized (U/d) speech about childhood loss and/or abuse (Bakkum et al., 2023; Hesse, 2016; Hesse & Main, 2006; Jacobvitz & Reisz, 2019). Previous research has shown that U/d states of mind are highly prevalent in community (18 %), at risk (32 %), and clinical samples (43 %), in addition to being a major risk factor for a variety of clinical disorders in adulthood, such as anxiety, eating, dissociative, personality (borderline and antisocial), and posttraumatic stress disorders (Bakermans-Kranenburg & van Ijzendoorn, 2009; Lyons-Ruth & Jacobvitz, 2016; Stovall-McClough & Dozier, 2016). Moreover, U/d states of mind have been shown to be a key mechanism in the intergenerational trajectories of attachment traumas (Berthelot et al., 2015). More specifically, mothers classified as U/d are more likely to display frightening behaviors when interacting with their infants (Jacobvitz & Reisz, 2019), which in turn may predispose their offspring to develop disorganized attachment (Madigan et al., 2006).

Despite the fact that U/d states of mind in adulthood are a major risk factor for psychopathology and offspring's disorganized attachment, only a few instruments measuring this construct have been developed to date. The Adult Attachment Interview (AAI), the gold standard measure of attachment in adulthood (Crowell et al., 2016), requires important human and financial investment. In fact, becoming a reliable AAI coder requires extensive training (at least two weeks) and successful completion of an 18-month certification process. The interview takes about an hour to administer, must be transcribed verbatim, and its coding takes about 4 h. The amount of resources required for this process limits the widespread use of the AAI and highlights the need for a brief self-report measure. Consequently, the aim of the current study was to develop and validate a short self-report measure of U/d states of mind.

1.1. Measures of attachment disorganization in adulthood

1.1.1. Adult attachment interview

The Adult Attachment Interview (AAI; George et al., 1996) is a semi-structured interview that was initially developed to explore parents' mental representations of attachment and their association with the quality of the attachment relationship they develop with their own child. During the interview, adults are asked about their relationships with primary caregivers and their effects upon current personality and functioning. A primary attachment classification (i.e., secure-autonomous, dismissing or preoccupied) is inferred from the content, coherence, and clarity of their discourse using the Adult Attachment Coding and Classification System (Main et al., 2003). An additional U/d classification is assigned to individuals who manifest marked lapses in the monitoring of reasoning or discourse during discussions of potentially traumatic experience. Lapses in the monitoring of reasoning are indicative of incompatible beliefs, such as the belief that a dead person is still alive, whereas lapses in the monitoring of discourse are characterized by sudden alterations in the typical manner of speaking throughout the interview (Hesse, 2016; Hesse & Main, 2006; Jacobvitz & Reisz, 2019). The AAI has demonstrated excellent stability and construct validity (Hesse, 2016). The attachment classification of parents has also been shown to be consistently correlated (*r*s ranging from 0.19 to 0.49; van IJzendoorn, M. H., 1995) with infants' attachment styles as assessed in the Strange Situation (Ainsworth et al., 1978).

Despite its solid psychometric properties, the AAI requires face-to-face interactions with trained interviewers, the transcript of the full verbatim exchange, and a codification by certified individuals, which can be a barrier to its use when resources are limited. Moreover, the fact that the U/d scales are coded only if participants accept to discuss previous experiences of loss or abuse may have contributed to the low rates of U/d classifications observed in some populations with severe attachment disturbances (Beeney et al., 2017).

1.1.2. Self-report measures of disorganized attachment

In addition to being less time-consuming and costly, a self-report questionnaire measuring U/d states of mind may be advantageous compared with the AAI because it can be administered simultaneously to groups of people and doesn't require coding by trained researchers. To date, three self-report questionnaires have been elaborated to measure disorganized attachment in adulthood. However, only the Disorganized Response Scale (DRS; Briere et al., 2019) was developed in line with the U/d scales on the AAI, the two others (i.e., Adult Disorganization Measure, Paetzold et al., 2015; Revised Psychosis Attachment Measure, Pollard et al., 2020) measuring a slightly different construct. Specifically, these two instruments conceptualize disorganized attachment as seeking to approach an attachment figure in time of distress at the same time as apprehending this proximity with the attachment figure (e.g., "I want close relationships, but being close makes me feel frightened", Pollard et al., 2020). Although this conceptualization of disorganized attachment in adults is similar to that of attachment disorganization in early childhood (Main & Solomon, 1990; Paetzold

et al., 2015), this form of attachment ambivalence in adulthood is rather captured by the fearful-avoidant attachment style (Crowell et al., 2016), a concept that was firstly introduced by Bartholomew and Horowitz (1991). This attachment style reflects a vulnerable form of attachment avoidance, characterized by avoidance of intimacy for fear of being hurt by their romantic partner (Bartholomew & Horowitz, 1991). Although Pollard et al. (2020, p.3) proposed that "fearful attachment on self-report measures is understood to overlap with unresolved attachment on the AAI", a meta-analysis showed that U/d states of mind on the AAI was only trivially associated with the fearful-avoidant style ($r = 0.07$; Roisman et al., 2007), suggesting that U/d states of mind and the fearful-avoidant style are two different concepts.

In contrast to the two questionnaires presented above, the DRS measures self-reports of disorganized verbalizations, confusion, and incoherence occurring when a person is talking about their childhood. The DRS was developed from a principal component analysis performed on 20 items measuring incoherence, confusion, contradictory thoughts, poor reality monitoring, and freezing. The final version includes a single factor with 15 items. The context in which participants respond to the items is broader (i.e., discussion about childhood) than for the AAI (i.e., discussion about childhood loss or trauma) to permit the self-administration of the instrument. The DRS has an excellent internal consistency ($\alpha = 0.91$) and significantly explained the association between childhood maltreatment history and trauma-related psychological symptoms (see Briere et al., 2019, for more details).

1.1.3. Developing an alternative version of the DRS

While the DRS was deemed to be a promising instrument, its criterion validity in relation to the AAI has not been assessed yet, nor its ability to predict early developmental outcome in the next generation, which is an important correlate of parental U/d states of mind (Madigan et al., 2006). Moreover, its single-factor structure doesn't reflect the two linguistic indices at the core of the AAI conceptualization of U/d states of mind, i.e., lapses in the monitoring of reasoning and lapses in the monitoring of discourse (George et al., 1996;Hesse, 2016 ; Hesse & Main, 2006 ; Jacobvitz & Reisz, 2019). Although these two indices are not measured on two different scales in the AAI, they may be expected to be correlated and distinct in a self-report questionnaire, as they are understood to be two complementary manifestations of a cognitive interference caused by unintegrated traumatic experience (Hesse, 2016; Hesse & Main, 2006; Jacobvitz & Reisz, 2019). While lapses in the monitoring of reasoning are the expression of ideas that violate our usual understanding of physical causality or time–space relations, lapses in the monitoring of discourse are manifested by sudden alterations in the speech, appearing to involve entrance into compartmentalized states of mind in which discourse is not appropriately regulated (Hesse, 2016; Hesse & Main, 2006; Jacobvitz & Reisz, 2019). Because an important aspect of a questionnaire's construct validity is its factor structure (Hogan, 2019), and the ultimate goal of a factor analysis is to determine which subgroups of items are sufficiently correlated to form a factor (Tabachnick & Fidell, 2019), a self-report questionnaire conceived primarily from these two linguistic indices would therefore be likely to include two correlated factors.

1.2. Current study

In order to provide researchers and clinicians with an accessible and well-validated measure of U/d states of mind, this study first aimed to develop a self-report questionnaire based on the two fundamental linguistic indices at the core of the AAI U/d states of mind measurement, *lapses in the monitoring of reasoning* and *lapses in the monitoring of discourse*, from the pool of 20 items that were used to develop the original DRS. Second, the psychometric properties of this new instrument were evaluated by testing its (1) factor structure, (2) internal consistency, (3) criterion validity with a global score of U/d states of mind on the AAI, and (4) construct validity through two path analysis models. The first model tested the indirect effect of the new instrument in the association between childhood trauma severity and a latent measure of trauma-related psychological symptoms in adulthood (i.e., borderline personality disorder, post-traumatic stress disorder, and dissociative symptoms), controlling for the effects of attachment anxiety and avoidance, two other dimensions of insecure attachment related to psychological symptoms (Lafontaine et al., 2016; Wei et al., 2007). The second model tested the indirect effect of the new instrument in the association between the severity of parents' childhood trauma and their infants' social-emotional development, above and beyond the effects of attachment anxiety and avoidance.

2. Method

2.1. Participants and procedure

The study received ethical approval from our University Ethics Committee (CER-15-210-07) and from the Institutional Review Board of our regional health center (CER-2014-027). The data were collected as part of a larger longitudinal project on adaptation to parenthood and infant development. During prenatal classes offered between June 2015 and May 2017, 222 expectant parents (78 % women;) were invited, during their third trimester of pregnancy, to complete a battery of self-report questionnaires assessing childhood trauma, attachment, and psychological symptoms (T1). A subsample of 74 parents also participated in the AAI at T1. This subsample did not differ significantly from the other participants regarding their sex, $\chi^2(1) = 0.07$, $p = .79$, age, $t(214) = 0.40$, $p = .69$, education level, $\chi^2(3) = 2.09$, $p = .56$, income, $\chi^2(3) = 3.16$, $p = .37$, and their childhood trauma mean score, $t(121.15) = -1.93$, $p = .06$. Participants were aged from 17 to 45 years old ($M = 28.45$, $SD = 4.89$), and most of them were French Canadian (92 %), employed (83 %), and in a common-law relationship or married (92 %). Data of both members of the parental dyad were collected for 52 participants (26 couples). The participants mostly completed a postsecondary degree (84 %) and they reported an average annual familial income of $82,000 CAN ($SD = 38,000$). Twenty-nine percent reported having experienced childhood maltreatment, under the form of physical abuse (6.8 %), sexual abuse (9.1 %), emotional abuse (19.5 %), physical neglect (12.3 %) or emotional neglect (5.0 %).

Women aged 17 or over, who were not suffering from psychosis at T1 and who were not reporting premature childbirth (< 37 weeks), severe peripartum complications or child congenital disorder when contacted for the longitudinal follow-up around 12 months postpartum ($M_{age} = 12.05$ months, $SD = 1.74$), were invited to complete a second battery (T2) of parent-report questionnaires on their infants' development ($n = 66$; 50 % girls). This subsample of parents did not differ significantly from the full sample regarding their age, $t(214) = 1.23$, $p = .93$, education level, $\chi^2(3) = 2.77$, $p = .43$, income, $\chi^2(3) = 3.06$, $p = .38$, and their childhood trauma mean score, $t(218) = -0.87$, $p = .39$.

2.2. Measures

2.2.1. Self-reported unresolved/disorganized states of mind

In order to create a new self-report questionnaire measuring U/d states of mind, we first proceeded to the translation of the initial pool of 20 items used to develop the original DRS (Briere et al., 2019). Using the back-translation method (Vallerand, 1989), the items were translated from English into French (4th and 6th authors) and then back translated into English by an independent translator. The equivalence between each original and back-translated item was examined by a committee of three researchers, including the author of the original instrument (3rd author), to ensure that the meaning was the same. Second, three researchers (1st, 2nd, and 6th authors) independently reviewed all items to ensure that they properly reflected lapses in the monitoring of reasoning or discourse, as defined in the Adult Attachment Coding and Classification System (Main et al., 2003). Items showing considerable overlap with posttraumatic stress disorder symptoms or other types of insecure attachment (i.e., dismissing or preoccupied) were excluded. Of note, two items of the original DRS (i.e., "I stop making sense" and "I think things that aren't true") were reworded after data collection began in the current French-Canadian sample and were therefore not included in the analyses. Based on a conceptual approach, we then selected the eight items that compose the DRS-8 (Briere et al., 2022), which includes two dimensions (i.e., lapses in the monitoring of reasoning and lapses in the monitoring of discourse) measured by four items each. As for the original DRS, the items: (a) followed the sentence "When I talk about my childhood . . .," (b) are rated on a 5-point Likert-type scale (1 = *Not at all true*, 5 = *Very true*), and (c) are summed to provide a global score for which a higher score indicates a higher level of U/d states of mind.

2.2.2. Unresolved/disorganized states of mind on the Adult Attachment Interview

The AAI (George et al., 1996) was used to assess participants' U/d states of mind. The AAI is a one-hour semi-structured interview that includes 20 questions on the interviewee's relationships with their parents during childhood. The entire interview was transcribed, including all the interviewer's and the participant's spoken contributions, (timed) pauses, dysfluencies, and restarts. A trained, certified, and reliable coder (5th author), according to the AAI training institute, rated the participants' striking lapses in the monitoring of reasoning or discourse during discussions of childhood loss or trauma on a 9-point Likert-type scale (1 = *no evidence of disorganization or disorientation in discussion of the abuse*; 9 = *marked disorganization/disorientation*). The two resulting dimensional scales, i.e., unresolved loss and trauma, were summed to provide a global U/d states of mind score, given that a study by Raby et al. (2020) showed that these two scales loaded on the same factor and that taxonomic analysis produced evidence supporting a dimensional rather than a categorical model of the AAI.

2.2.3. Attachment anxiety and avoidance

The French 12-item version (ECR-12; Lafontaine et al., 2016) of the Experiences in Close Relationships questionnaire (ECR; Brennan et al., 1998) was used to assess participants' attachment in a romantic relationship context. The ECR and its revised versions are recommended as the gold standard for self-report instruments assessing adult romantic attachment (Crowell et al., 2016). The ECR-12 includes two dimensions (i.e., anxiety and avoidance), each of which is measured by six items rated on a 7-point Likert-type scale (1 = *Disagree strongly*, 7 = *Agree strongly*). The anxiety dimension reflects a tendency to be hypervigilant to signs of rejection and potential abandonment from the attachment figure, whereas the avoidance dimension reflects an excessive need for independence and discomfort with emotional intimacy (Lafontaine et al., 2016). Higher mean scores reflect greater anxiety or avoidance. The ECR-12 has demonstrated good validity and reliability (Lafontaine et al., 2016; Tasca et al., 2018), with omega coefficients of 0.91 for anxiety and 0.83 for avoidance in the current study.

2.2.4. Childhood trauma

Childhood trauma was assessed using the short form of the Childhood Trauma Questionnaire (CTQ-28; Bernstein et al., 2003) translated into French (Paquette et al., 2014). This 28-item questionnaire comprises five dimensions measuring different types of abuse (sexual, physical, emotional) and neglect (physical and emotional) using a 5-point Likert-type scale (1 = *Never true*, 5 = *Very often true*). Higher scores indicate greater severity of childhood trauma. The CTQ-28 has shown good validity and reliability (Bernstein et al., 2003; Forde et al., 2012), with an omega coefficient of 0.91 in the current study.

2.2.5. Trauma-related psychological symptoms

Three self-report questionnaires were used to assess the severity of trauma-related psychological symptoms in participants. The French version (Ashbaugh et al., 2016) of the Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013) was used to measure symptoms of posttraumatic stress disorder (PTSD). This questionnaire comprises 20 items evaluating symptoms of reexperiencing, avoidance, negative alterations in cognitions and mood, and hyperarousal in the past month using a 5-point Likert-type scale (0 = *Not at all*, 4 = *Extremely*). Higher total scores indicate greater severity. The PCL-5 has shown excellent validity and reliability (Ashbaugh et al., 2016; Blevins et al., 2015), with an omega coefficient of 0.93 in the current study.

The second version (DES II; Carlson & Putnam, 1993) of the Dissociative Experiences Scale (Bernstein & Putnam, 1986) translated into French (Darves-Bornoz et al., 1999) was used to assess the frequency of dissociative experiences. This measure comprises 28 items rated by a ratio scale (0 to 100, with 10 increments in between) indicating the percentage of time that the participants had experienced symptoms of absorption, derealization, depersonalization or amnesia. A higher mean score reflects greater severity of dissociative symptoms. The DES has shown excellent psychometric properties (Carlson & Putnam, 1993; Darves-Bornoz et al., 1999), with an omega coefficient of 0.95 in the current study.

The French version (Laconi et al., 2016) of the Personality Diagnostic Questionnaire for DSM-IV Revised (PDQ-4+; Hyler, 1994) was used to assess borderline personality disorder (BPD) symptoms. The BPD symptoms scale comprises nine items rated on a dichotomic scale (*True*, *False*) based on the DSM-IV-TR criteria of a BPD. Higher scores indicate more symptoms. The internal consistency of the BPD scale was satisfactory in the current study, with an omega coefficient of 0.92.

2.2.6. Infant development

The French 12-month version of the Ages & Stages Questionnaires: Social-Emotional (ASQ-SE; Squires et al., 2002) was used to assess infant social-emotional development. This questionnaire comprises 25 items: 22 items are rated on a 3-point scale (0 = *Never or rarely*, 5 = *Sometimes*, 10 = *Most of the time*), whereas the three other items are open questions and were not included in the scoring. Each item receives an additional five points when parents indicate that they are concerned about the behavior described in the item. A higher score is indicative of greater social-emotional difficulties. The ASQ-SE showed good validity, whereas its internal consistency tends to be low for younger ages, such as for the six- and 12-month versions (e.g., Chen et al., 2016; Squires et al., 2002). The omega coefficient was 0.64 in the current study, which is comparable to previous studies using a maternal report of child development (e.g., Chang et al., 2021; Junge et al., 2017).

2.3. Statistical analyses

2.3.1. Factor structure and internal consistency

The factor structure of the DRS-8 was examined by a confirmatory factor analysis (CFA) performed with Mplus (Muthén & Muthén, 2017). The robust weighted least squares estimator (WLSMV) was used as it is the appropriate estimator for ordinal scales (Li, 2016; Wu & Leung, 2017). As we were interested in validating a general construct of disorganized responses with its two dimensions, we tested a bifactor model as it is the only appropriate hierarchical model for a two-dimension questionnaire, a second-order factor model requiring three or more dimensions to be statistically estimated (Chen & Zhang, 2018). A hierarchical model has the advantage of testing a factor structure comprising a general construct and multiple subtest constructs (Chen & Zhang, 2018; Cho, 2016; Dunn & McCray, 2020). The validation of a hierarchical model is required when a measure is multidimensional and the use of its total score including all items is intended (Chen & Zhang, 2018; Cho, 2016; Dunn & McCray, 2020). A bifactor model comprises a general factor explaining the variances of all items and at least two group factors (i.e., the dimensions) explaining the variances of their respective items, over and above the general factor (Chen & Zhang, 2018; Cho, 2016; Dunn & McCray, 2020). The covariances between the three factors (i.e., the general and two group factors) are usually set to 0 and their variances are set to 1 (Chen & Zhang, 2018; Cho, 2016). The goodness of fit of this model was assessed by comparing its fit indices to four well-validated cut-off criteria: a non-significant chi-square, a root mean square error of approximation (RMSEA) of 0.06 or less, a comparative fit index (CFI) of 0.95 or more, and a standardized root square residual (SRMR) of 0.08 or less (Hu & Bentler, 1999; Tabachnick & Fidell, 2019).

The internal consistency of the DRS-8 was assessed by computing omega (ω) coefficients, since ω is the adequate reliability coefficient to calculate when the assumption of essential tau-equivalence is not met (Cho, 2016; Hayes & Coutts, 2020; McDonald, 1999). Tau-equivalent reliability, such as measured by Cronbach's alpha, requires that factor loadings of all items are restricted to be equal, and that all subtest constructs have an equal number of items (Cho, 2016; Hayes & Coutts, 2020; McDonald, 1999).

2.3.2. Criterion and construct validity

The criterion validity of the DRS-8 was assessed by correlating its total score with a composite score summing the two AAI U/d scales with SPSS. As meta-analytic results showed trivial to small correlations between the AAI classifications and measures of self-reported attachment (*r*s ranging between 0.09 and 0.15; Roisman et al., 2007), a correlation of 0.15 or higher would represent a satisfactory association.

Finally, the construct validity of the DRS-8 was examined using two path analysis models performed with Mplus. The first model tested the indirect effect of the DRS-8 in the association between the severity of childhood trauma and a latent variable of trauma-related psychological symptoms in adulthood (i.e., BPD, PTSD, and dissociative symptoms), controlling for attachment anxiety and avoidance. The second model examined the indirect effect of the DRS-8 in the association between parents' childhood trauma severity and their infants' social-emotional development, controlling for attachment anxiety and avoidance. If the confidence interval obtained does not contain zero, the indirect effect is considered to be significant. As data of both members of the parental dyad were collected for 52 participants (26 couples), and that the score of infant development was the same for both of them (we retained the mother's score only), we controlled for the nonindependence of the data by clustering standard errors by dyad (Solomon & Jackson, 2014). The goodness of fit of these two models was evaluated by the fit indices presented above.

3. Results

3.1. Preliminary analyses

Prior to performing the main analyses, data were screened for missing data and outliers. Missing data were handled with the full information maximum likelihood (FIML) procedure in Mplus and outliers were replaced by less extreme scores corresponding to a | 3.29| *z*-score value (Tabachnick & Fidell, 2019). Following this step, several variables still showed moderate departures from normality so we used non-parametric or robust statistical tests in our analyses.

Table 1 presents the descriptive statistics of the DRS-8 and its correlations with the variables used for its validation. The DRS-8 total scores ranged from 8 to 24. Interitem Spearman's correlations ranged from 0.39 to 0.48 ($M = 0.43$; $SD = 0.04$) for lapses in the monitoring of reasoning, and from 0.42 to 0.66 ($M = 0.53$; $SD = 0.08$) for lapses in the monitoring of discourse. The two dimensions are strongly correlated, $r(219) = 0.50$, $p < .001$.

3.2. Factor structure and internal consistency

The bifactor model adequately fit the data, $\chi^2(12, n = 221) = 16.57$, $p = .17$, RMSEA = 0.04, 90 % CI [0.00, 0.09], CFI = 1.00, SRMR = 0.03. As shown in Fig. 1, all items sufficiently loaded (≥ 0.32; Tabachnick & Fidell, 2019) on a general factor of disorganized responses and six of the eight items sufficiently loaded on their respective dimension. The internal consistency was satisfactory for the whole instrument ($\omega = 0.87$), as well as for the two dimensions ($\omega = 0.79$ for each dimension).

3.3. Criterion and construct validity

A significant correlation was found between the DRS-8 total scores and the U/d states of mind global scores on the AAI, $r(219) = 0.28$, $p = .02$ (two-tailed). The construct validity of the DRS-8 was first examined by testing its indirect effect in the association between the severity of childhood trauma and trauma-related psychological symptoms, controlling for the two dimensions of romantic attachment. The model adequately fit the data, $\chi^2(8, n = 220) = 10.06$, $p = .26$, RMSEA = 0.03, 90 % CI [0.00, 0.09], CFI = 0.99, SRMR = 0.02, and explained 63 % of the variance in psychological symptoms. As shown in Fig. 2, higher severity of childhood trauma was significantly associated with higher DRS-8 scores and attachment anxiety, which in turn were significantly associated with greater symptomatology. Attachment avoidance was not significantly associated with childhood trauma and symptomatology. The indirect effects through the DRS-8, $b = 0.04$, 95 % CI [0.02, 0.05], $\beta = 0.23$, and attachment anxiety, $b = 0.01$, 95 % CI [0.001, 0.02], $\beta = 0.05$, were both significant. We further explored whether the DRS-8 scores explained the association between childhood trauma and symptomatology more strongly than attachment anxiety. The results of a chi-square difference test showed that, when the paths *childhood trauma to DRS-8* and *childhood trauma to attachment anxiety* were constrained to equality, and the paths *DRS-8 to symptomatology* and *attachment anxiety to symptomatology* were also constrained to equality, the fit of the model significantly decreased, $\Delta\chi^2(2) = 29.12$, $p < .001$, and the constrained model no longer fit the data, $\chi^2(10, n = 220) = 40.87$, $p \leq 0.001$, RMSEA = 0.12, 90 % CI [0.08, 0.16], CFI = 0.90, SRMR = 0.09, suggesting that the indirect effect through the DRS-8 was significantly stronger than the indirect effect through attachment anxiety.

Second, the construct validity of the DRS-8 was examined by testing its indirect effect in the association between the severity of parents' childhood trauma and their infants' social-emotional development, controlling only for attachment anxiety as attachment

Table 1
Descriptive statistics for and Spearman's correlations between study variables.

	1	2	3	4	5	6	7	8	9
1. DRS-8	–								
2. U/d AAI	0.28*	–							
3. Anxiety	0.37***	−0.12	–						
4. Avoidance	0.18**	−0.03	0.21**	–					
5. Trauma	0.52***	0.37***	0.24***	0.20**	–				
6. BPD Sx	0.49***	0.30**	0.39***	0.14*	0.41***	–			
7. PTSD Sx	0.47***	0.32**	0.47***	0.21**	0.44***	0.52***	–		
8. Dissociative Sx	0.43***	0.15	0.25***	0.12	0.25***	0.37***	0.46***	–	
9. Infant development	0.35**	0.18	0.32**	0.19	0.13	0.28*	0.37**	0.30*	–
n	221	74	220	219	220	219	220	216	67
M	10.55	2.29	3.30	1.95	31.89	2.23	9.61	9.21	22.64
SD	3.63	2.28	1.47	0.92	9.35	1.90	9.51	8.45	15.17

Note. U/d AAI = Unresolved/disorganized states of mind on the Adult Attachment Interview. BPD = borderline personality disorder. PTSD = posttraumatic stress disorder. Sx = symptoms. The correlation between U/d AAI and infant development should be interpreted with caution as it was estimated on a subsample of only 21 participants.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

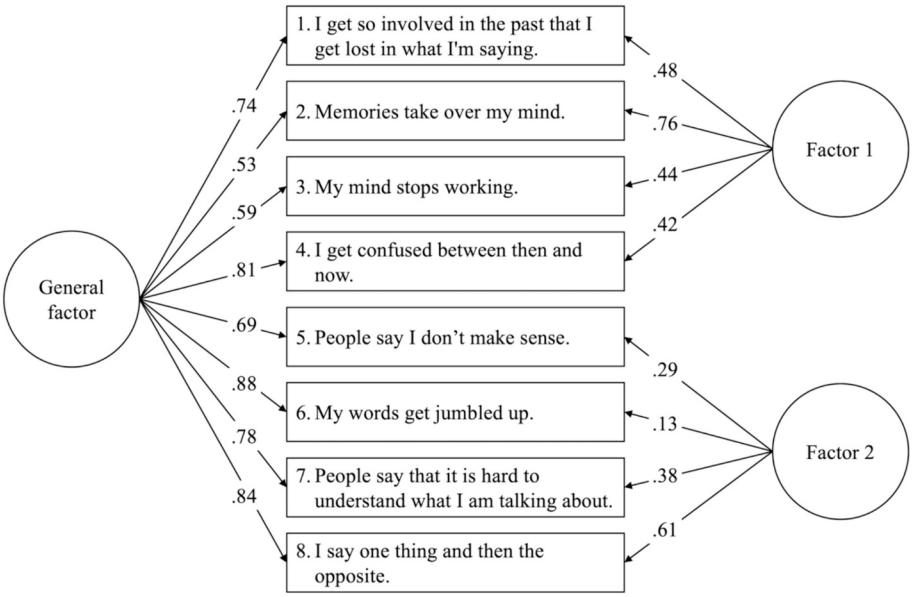

Fig. 1. Factor analysis testing a bifactor model of the DRS-8.

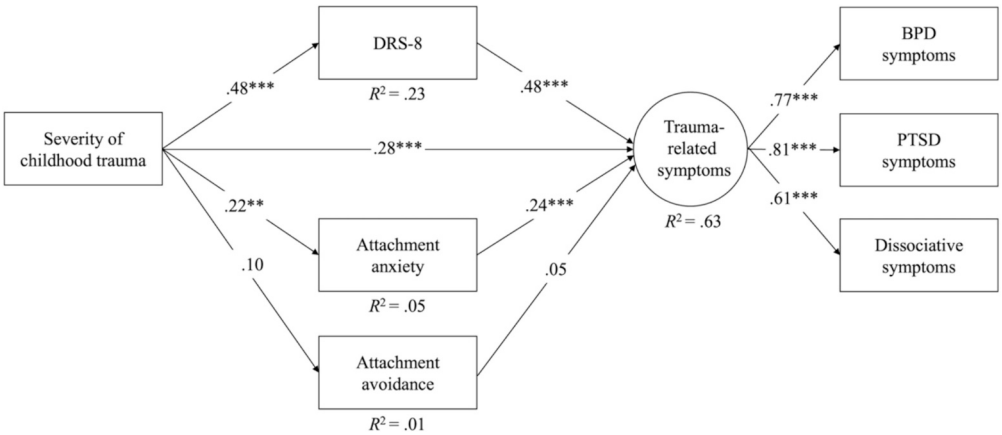

Fig. 2. Model testing the indirect effects of the DRS-8 and attachment dimensions in the association between the severity of childhood trauma and trauma-related symptoms in adulthood.

Note. BPD = borderline personality disorder. PTSD = posttraumatic stress disorder. The DRS-8 significantly correlated with attachment anxiety (r = 0.32, $p < .001$) and avoidance (r = 0.20, p = .014). Attachment anxiety significantly correlated with avoidance (r = 0.19, p = .003). Standardized coefficients are shown.

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

avoidance was not significantly associated with social-emotional development (see Table 1). As presented in Fig. 3, greater severity of parents' childhood trauma was significantly associated with higher DRS-8 and attachment anxiety scores, which in turn were significantly associated with poorer infant social-emotional development. However, only the indirect effect through the DRS-8 was significant, b = 0.43, 95 % CI [0.07, 0.78], β = 0.24, the indirect effect through attachment anxiety being not significant, b = 0.08, 95 % CI [−0.01, 0.18], β = 0.05. The model explained 21 % of the variance in infant social-emotional development. Because this model is saturated (i.e., the number of free parameters exactly equals the number of known values) and that the fit indices of the model could not be calculated, we tested the model without the nonsignificant direct effect between childhood trauma and social-emotional development to provide an estimation of the goodness of fit of the saturated model. Fit indices indicated that this model adequately fit the data, $\chi^2(1, n = 67) = 1.26$, p = .26, RMSEA = 0.06, 90 % CI [0.00, 0.34], CFI = 1.00, SRMR = 0.03.

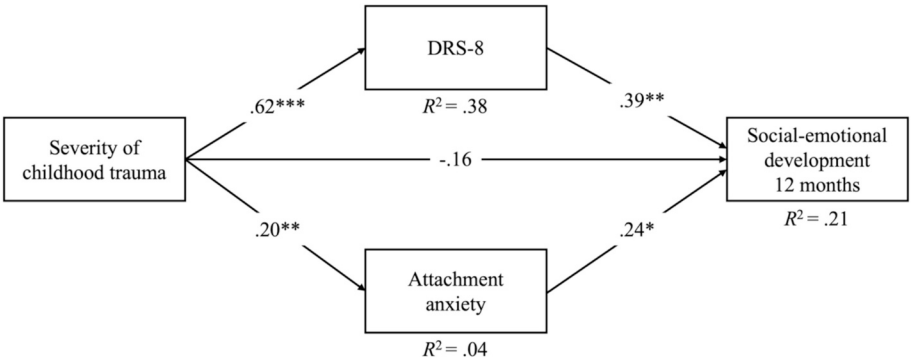

Fig. 3. Model testing the indirect effect of the DRS-8 in the association between the severity of childhood trauma in parents and their infants' social-emotional development, controlling for attachment anxiety.
Note. The DRS-8 scores significantly correlated with attachment anxiety ($r = 0.32$, $p = .004$). Standardized coefficients are shown.
$^{**}p < .01$. $^{***}p < .001$.

4. Discussion

This study aimed to document the psychometric properties of the DRS-8 in a sample of 222 expectant parents by examining its factor structure, internal consistency, criterion validity with a U/d states of mind global score on the AAI, and its construct validity through two path analysis models.

4.1. Factor structure and internal consistency

The DRS-8 comprises two highly correlated dimensions: lapses in the monitoring of reasoning (four items) and laps in the monitoring of discourse (four items). These dimensions tap the two forms of lapses in the monitoring (reasoning and discourse) that are at the core of the U/d states of mind scales measured on the AAI (Hesse, 2016; Hesse & Main, 2006; Jacobvitz & Reisz, 2019). The results of a CFA testing a bifactor model indicated that the eight items of the DRS-8 significantly loaded on a general factor, whereas six of the eight items significantly loaded on their respective dimension. As the two dimensions are highly correlated and clearly measure the same concept of disorganized responses, this suggests that using the DRS-8 total score may be preferable to using its dimensions separately. With regard to the internal consistency of the DRS-8, it was satisfactory for the whole instrument, as well as for its two dimensions.

4.2. Criterion and construct validity

As evidence of criterion validity, a significant correlation was found between the DRS-8 total scores and the U/d states of mind global scores on the AAI ($r = 0.28$), which was larger than those reported in previous studies on AAI classifications and self-reported attachment (*r*s ranging between 0.09 and 0.15; Roisman et al., 2007). However, the fact that the assessment of U/d states of mind on the AAI is restricted to lapses in the monitoring of reasoning or discourse when specifically discussing about childhood loss or abuse may partly explain that the correlation observed between DRS-8 scores and the U/d scale was not as strong as it can be expected in an analysis of criterion validity. Indeed, participants who did not experience loss of an attachment figure or childhood maltreatment automatically obtain a score of zero on the U/d scale, which reduces data variance considerably, especially in community samples. One main effect of this statistical limitation is to produce weaker correlations with other variables (Hogan, 2019). As a result, a stronger correlation was not expected in the current study.

The construct validity of the DRS-8 was first examined by testing its indirect effect in the association between the severity of childhood trauma and trauma-related psychological symptoms (BPD, PTSD, and dissociative symptoms), controlling for attachment anxiety and avoidance. The results showed that the severity of childhood trauma was significantly associated with trauma-related psychological symptoms through the DRS-8 indirect effect. These results are in line with those of two meta-analyses showing that disorganized attachment is three times more prevalent in maltreating environments than in middle class families (Cyr et al., 2010; van Ijzendoorn et al., 1999), and with the fact that disorganized attachment in adulthood is a meaningful risk factor for BPD, PTSD, and dissociative symptoms (Beeney et al., 2017; Stovall-McClough & Dozier, 2016). The results also revealed a significant indirect effect through attachment anxiety. Further statistical exploration revealed that the indirect effect through the DRS-8 was significantly stronger than the indirect effect through attachment anxiety, which is coherent with the conception that disorganized attachment is at the most insecure and clinical end of the attachment spectrum (Beeney et al., 2017; Crowell et al., 2016; Solomon & George, 2016).

The construct validity of the DRS-8 was secondly examined by testing its indirect effect in the prospective association between the severity of childhood trauma in parents and their infants' social-emotional development, controlling for attachment anxiety only as attachment avoidance was not significantly associated with infant development. This may be explained by the low level of attachment avoidance reported by parents. The results revealed that only the indirect effect through the DRS-8 was significant. These results are

consistent with those of a meta-analysis showing that higher U/d states of mind in parents was moderately associated with higher disorganized attachment in their infants ($r = 0.31$; van IJzendoorn, M. H., 1995), disorganized attachment in children being a meaningful risk factor for greater social-emotional problems (Hazen et al., 2011). Specifically, parents with higher U/d states of mind are likely to experience more severe disruptions in affective communication with their infant, characterized by negative-intrusive behaviors, role confusion, disorientation, affective communicative errors, and withdrawal (Lyons-Ruth & Jacobvitz, 2016). The severity of these disruptions may affect social-emotional development, as emotional competences largely develop through close interactions with primary caregivers (Baker, 2018). In sum, the two significant indirect effects of the DRS-8 that were found in this study are consistent with previous findings and theoretical framework, providing empirical evidence of the construct validity of the instrument.

4.3. Limitations and future directions

This study has to be appreciated in the light of its limitations. First, its correlational research design prevents from inferring causation between variables. Second, the data were collected from a community sample, which explains the low DRS-8's mean score and variance observed in this study. Further research in clinical populations is needed to examine the psychometrics qualities of the DRS-8. Given that U/d attachment representations are much more common in clinical samples than in community samples (43 % vs 18 %; Bakermans-Kranenburg & van IJzendoorn, 2009), it is expected that the DRS-8 would yield stronger associations with U/d scores on the AAI and psychopathology in clinical samples. Third, the model testing infant social-emotional development is based on a subsample of 67 parent-infant dyads, resulting in a sample size-to-parameters ratio of 7:1, which is below the minimum expected ratio (10:1) required for stable results (Kline, 2015). Further validation of the DRS-8 regarding infant social-emotional development is therefore needed. Future studies could assess the relation between mothers' DRS-8 scores and their infants' attachment styles using the Strange Situation (Ainsworth et al., 1978) to further evaluate the DRS-8's validity and clinical applicability in assessing the intergenerational transmission of disrupted attachment. Moreover, the generalizability of the findings was limited by the overrepresentation of women in this sample and further research is needed to determine the validity of DRS across sex and genders (e.g., with fathers) and cross-culturally. However, few gender differences in the distribution of attachment representations have been reported (Bakermans-Kranenburg & van IJzendoorn, 2009) and similar findings are expected in male samples. Finally, the DRS-8 could not be compared with the original DRS given that two items were reworded in the original instrument after the data collection began in the current sample. Further research is needed to examine whether the DRS-8 is equally or more effective than the original DRS in predicting U/d states of mind. Until that is determined, we recommend that researchers include both the DRS and DRS-8 scales in future studies of disorganized attachment and its effects. However, clinicians are encouraged to use the DRS-8 to screen for the risk of unresolved attachment representations as the present study is the only one to have tested the construct validity of the DRS with the AAI.

5. Conclusion

The DRS-8 is the only self-report measure of U/d attachment that showed evidence of criterion validity with the AAI. This brief instrument may therefore be useful in research and, potentially, clinical contexts when financial resources and time are limited. Parental trauma and self-reported attachment explained 21 % of the variance in infant social-emotional development, and the DRS-8 explained the association between parental trauma and infant social-emotional development, suggesting that U/d states of mind may represent a crucial target of parental interventions to mitigate the intergenerational repercussions of trauma.

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CRediT authorship contribution statement

Kristel Mayrand: Writing – original draft, Methodology, Formal analysis, Data curation. **Tristan Milot:** Writing – review & editing, Validation, Supervision, Methodology. **John Briere:** Writing – review & editing, Validation, Conceptualization. **Natacha Godbout:** Writing – review & editing, Validation, Conceptualization. **Sébastien Oliva-Veilleux:** Writing – review & editing, Project administration, Methodology, Investigation. **Nicolas Berthelot:** Writing – review & editing, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

None.

Data availability

Data will be made available on request.

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References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.

Ashbaugh, A. R., Houle-Johnson, S., Herbert, C., El-Hage, W., & Brunet, A. (2016). Psychometric validation of the English and French versions of the Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5). *PLoS One, 11*(10), Article e0161645. https://doi.org/10.1371/journal.pone.0161645

Baker, S. (2018). The effects of parenting on emotion and self-regulation. In M. Sanders, & A. Morawska (Eds.), *Handbook of parenting and child development across the lifespan* (pp. 217–240). Springer. https://doi.org/10.1007/978-3-319-94598-9_10.

Bakermans-Kranenburg, M., & van IJzendoorn, M. (2009). The first 10,000 adult attachment interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attachment & Human Development, 11*(3), 223–263. https://doi.org/10.1080/14616730902814762

Bakkum, L., Verhage, M. L., Schuengel, C., Duschinsky, R., Cornelisz, I., van Klaveren, C., … Behrens, K. (2023). Exploring the meaning of unresolved loss and trauma in more than 1,000 Adult Attachment Interviews. *Development and Psychopathology, 35*(2), 587–603. https://doi.org/10.1017/S0954579421001735

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*(2), 226–244. https://doi.org/10.1037//0022-3514.61.2.226

Beeney, J. E., Wright, A. G. C., Stepp, S. D., Hallquist, M. N., Lazarus, S. A., Beeney, J. R. S., … Pilkonis, P. A. (2017). Disorganized attachment and personality functioning in adults: A latent class analysis. *Personality Disorders, Theory, Research, and Treatment, 8*(3), 206–216. https://doi.org/10.1037/per0000184

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease, 174*(12), 727–735. https://doi.org/10.1097/00005053-198612000-00004

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., … Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect, 27*(2), 169–190. https://doi.org/10.1016/s0145-2134(02)00541-0

Berthelot, N., Ensink, K., Bernazzani, O., Normandin, L., Luyten, P., & Fonagy, P. (2015). Intergenerational transmission of attachment in abused and neglected mothers: The role of trauma-specific reflective functioning. *Infant Mental Health Journal, 36*(2), 200–212. https://doi.org/10.1002/imhj.21499

Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress, 28*, 489–498. https://doi.org/10.1002/jts.22059

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. Basic Books.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson, & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). Guilford Press.

Briere, J., Berthelot, N., Mayrand, K., Godbout, N., & Milot, T. (2022). *The Disorganized Response Scale – 8 item version (DRS-8)*. Los Angeles, CA: University of Southern California (Unpublished Manuscript).

Briere, J., Runtz, M., Eadie, E. M., Bigras, N., & Godbout, N. (2019). The Disorganized Response Scale: Construct validity of a potential self-report measure of disorganized attachment. *Psychological Trauma Theory Research Practice and Policy, 11*(5), 486–494. https://doi.org/10.1037/tra0000396

Cassidy, J. (2016). The nature of the child's ties. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 3–24). The Guilford Press.

Carlson, E. B., & Putnam, F. W. (1993). An update on the Dissociative Experiences Scale. *Dissociation: Progress in the Dissociative Disorders, 6*(1), 16–27.

Chang, Y.-T., Feng, J.-Y., Chang, H.-Y., Chang, Y.-C., & Lee, C.-K. (2021). The impacts of maternal childhood adversity, stress, and mental health on child development at 6 months in Taiwan: A follow-up study. *Development and Psychopathology, 33*, 970–979. https://doi.org/10.1017/S0954579420000267

Chen, C. Y., Filgueiras, A., Squires, J., & Landeira-Fernandez, J. (2016). Examining the factor structure of an early childhood social emotional screening assessment. *Journal of Special Education and Rehabilitation, 17*(3–4), 89–104. https://doi.org/10.19057/jser.2016.12

Chen, F. F., & Zhang, Z. (2018). Bifactor models in psychometric test development. In P. Irwing, T. Booth, & D. J. Hughes (Eds.), *The Wiley handbook of psychometric testing: A multidisciplinary reference on survey, scale and test development* (pp. 325–345). Wiley Blackwell. https://doi.org/10.1002/9781118489772.ch12.

Cho, E. (2016). Making Reliability Reliable: A systematic approach to reliability coefficients. *Organizational Research Methods, 19*(4), 651–682. https://doi.org/10.1177/1094428116656239

Crowell, J. A., Fraley, R. C., & Roisman, R. I. (2016). Measurement of individual differences in adult attachment. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 598–635). The Guilford Press.

Cyr, C., Euser, E. M., Bakermans-Kranenburg, M., & van IJzendoorn, M. (2010). Attachment security and disorganization in maltreating and high-risk families: A series of meta-analyses. *Development and Psychopathology, 22*(1), 87–108. https://doi.org/10.1017/S0954579409990289

Darves-Bornoz, J. M., Degiovanni, A., & Gaillard, P. (1999). Validation of a French version of the Dissociative Experiences Scale in a rape-victim population. *Canadian Journal of Psychiatry, 44*(3), 271–275. https://doi.org/10.1177/070674379904400308

Dunn, K. J., & McCray, G. (2020). The place of the bifactor model in confirmatory factor analysis investigations into construct dimensionality in language testing. *Frontiers in Psychology, 11*, 1357. https://doi.org/10.3389/fpsyg.2020.01357

Forde, D. R., Baron, S. W., Scher, C. D., & Stein, M. B. (2012). Factor structure and reliability of the Childhood Trauma Questionnaire and prevalence estimates of trauma for male and female street youth. *Journal of Interpersonal Violence, 72*(2), 364–379. https://doi.org/10.1177/0886260511416461

George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview protocol* (3rd ed.). University of California at Berkley (unpublished manuscript).

Hayes, A. F., & Coutts, J. J. (2020). Use omega rather than Cronbach's alpha for estimating reliability. But…. *Communication Methods and Measures, 14*(1), 1–24. https://doi.org/10.1080/19312458.2020.1718629

Hazen, N., Jacobvitz, D., Higgings, K. N., & Allen, S. (2011). Pathways from disorganized attachment to later social-emotional problems: The role of gender and parent-child interactions. In J. Solomon, & C. George (Eds.), *Disorganized attachment and caregiving* (pp. 167–206). The Guilford Press.

Hesse, E. (2016). The Adult Attachment Interview. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 553–597). The Guilford Press.

Hesse, E., & Main, M. (2006). Frightened, threatening, and dissociative parental behavior: Theory and associations with parental adult attachment interview status and infant disorganization. *Development and Psychopathology, 18*, 309–343. doi:10.10170S0954579406060172.

Hogan, T. P. (2019). *Psychological testing: A practical introduction* (4th ed.). John Wiley.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Hyler, S. E. (1994). *Personality Diagnostic Questionnaire-4+ (PDQ-4+)*. New York.

Jacobvitz, D., & Reisz, S. (2019). Disorganized and unresolved states in adulthood. *Current Opinion in Psychology, 25*, 172–176. https://doi.org/10.1016/j.copsyc.2018.06.006

Junge, C., Garthus-Niegel, S., Slinning, K., Polte, C., Simonsen, T. B., & Eberhard-Gran, M. (2017). The impact of perinatal depression on children's social-emotional development: A longitudinal study. *Maternal and Child Health Journal, 21*(3), 607–615. https://doi.org/10.1007/s10995-016-2146-2

Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). The Guilford Press.

Laconi, S., Cailhol, L., Pourcel, L., Thalamas, C., Lapeyre-Mestre, M., & Chabrol, H. (2016). Dépistage des troubles de la personnalité avec la version française du Personality Diagnostic Questionnaire-4+ dans une population psychiatrique: Une étude préliminaire [Personality disorders screening with the French version of the Personality Diagnostic Questionnaire-4+ in a psychiatric population: A preliminary study]. *Annales Médico-Psychologiques, 174*(1), 39–44. https://doi.org/10.1016/j.amp.2014.10.022

Lafontaine, M.-F., Brassard, A., Lussier, Y., Valois, P., Shaver, P. R., & Johnson, S. M. (2016). Selecting the best items for a short-form of the Experiences in Close Relationships questionnaire. *European Journal of Psychological Assessment, 32*(2), 140–154. https://doi.org/10.1027/1015-5759/a000243

Li, C. H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods, 48*, 936–949. https://doi.org/10.3758/s13428-015-0619-7

Lyons-Ruth, K., & Jacobvitz, D. (2016). Attachment disorganization from infancy to adulthood: Neurobiological correlates, parenting contexts, and pathways to disorder. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 667–695). The Guilford Press.

Madigan, S., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Moran, G., Pederson, D. R., & Benoit, D. (2006). Unresolved states of mind, anomalous parental behavior, and disorganized attachment: A review and meta-analysis of a transmission gap. *Attachment & Human Development, 8*(2), 89–111. https://doi.org/10.1080/14616730600774458

Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 121–160). The University of Chicago Press.

Main, M., Goldwyn, R., & Hesse, E. (2003). *Adult Attachment Scoring and Classification System, Version 7.2*. Berkeley, Berkeley, CA: University of California (Unpublished manuscript).

McDonald, R. P. (1999). *Test theory: A unified treatment*. Mahwah, NJ: Lawrence Erlbaum.

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.

Paetzold, R. L., Rholes, W. S., & Kohn, J. L. (2015). Disorganized attachment in adulthood: Theory, measurement, and implications for romantic relationships. *Review of General Psychology, 19*(2), 146–156. https://doi.org/10.1037/gpr0000042

Paquette, D., Laporte, L., Bigras, M., & Zoccolillo, M. (2014). Validation de la version française du CTQ et prévalence de l'histoire de maltraitance [Validation of the French version of the CTQ and prevalence of the history of maltreatment]. *Santé Mentale au Québec, 29*(1), 201–220. https://doi.org/10.7202/008831ar

Pollard, C., Bucci, S., MacBeth, A., & Berry, K. (2020). The revised Psychosis Attachment Measure: Measuring disorganized attachment. *The British Journal of Clinical Psychology, 59*(3), 335–353. https://doi.org/10.1111/bjc.12249

Raby, K. L., Verhage, M. L., Fearon, R. M. P., Fraley, R. C., Roisman, G. I., van IJzendoorn, M. H., … Wong, M. S. (2020). The latent structure of the adult attachment interview: Large sample evidence from the collaboration on attachment transmission synthesis. *Development and Psychopathology, 1-13*. https://doi.org/10.1017/S0954579420000978

Roisman, G. I., Holland, A., Fortuna, K., Fraley, R. C., Clausell, E., & Clarke, A. (2007). The Adult Attachment Interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology, 92*(4), 678–697. https://doi.org/10.1037/0022-3514.92.4.678

Solomon, B. C., & Jackson, J. J. (2014). Why do personality traits predict divorce? Multiple pathways through satisfaction. *Journal of Personality and Social Psychology, 106*(6), 978–996. https://doi.org/10.1037/a0036190

Solomon, J., & George, C. (2016). The measurement of attachment security and related constructs in infancy and early childhood. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 366–396). The Guilford Press.

Squires, J., Bricker, D., & Twombly, E. (2002). *The Ages & Stages Questionnaires: Social-Emotional (ASQ-SE), user's guide*. Paul H. Brookes Publishing Co.

Stovall-McClough, K. C., & Dozier, M. (2016). Attachment states of mind and psychopathology in adulthood. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 715–738). The Guilford Press.

Tabachnick, B. G., & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). Pearson Education.

Tasca, G. A., Brugnera, A., Baldwin, D., Carlucci, S., Compare, A., Balfour, L., … Lafontaine, M.-F. (2018). Reliability and validity of the Experiences in Close Relationships Scale-12: Attachment dimensions in a clinical sample with eating disorders. *International Journal of Eating Disorders, 51*(1), 18–27. https://doi.org/10.1002/eat.22807

Thompson, R. A. (2016). Early attachment and later development: Reframing the questions. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 330–348). The Guilford Press.

Vallerand, R. (1989). Toward a methodology for the transcultural validation of psychological questionnaires: Implications for research in the French language. *Canadian Psychology, 30*(4), 662–680. https://doi.org/10.1037/h0079856

van IJzendoorn, M. H.. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin, 117*(3), 387–403. https://doi.org/10.1037/0033-2909.117.3.387

van IJzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology, 11*(2), 225–249. https://doi.org/10.1017/s0954579499002035

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). The PTSD Checklist for DSM-5 (PCL-5). Retrieved from the National Center for PTSD website: http://www.ptsd.va.gov.

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationship Scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment, 88*(2), 187–204. https://doi.org/10.1080/00223890701268041

Wu, H., & Leung, S.-O. (2017). Can Likert scales be treated as interval scales?—A simulation study. *Journal of Social Service Research, 43*(4), 527–532. https://doi.org/10.1080/01488376.2017.1329775