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ORIGINAL PAPER

The Development, Psychometric Analyses and Correlates of a Self-Report Measure on Disorganization and Role Reversal

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Abstract
A limited number of measures assess young adults' perceptions of childhood disorganized and controlling attachment, and although they are empirically strong, the use of these measures can be time consuming and financially straining. The current study aimed to add to the attachment literature by developing a self-report measure, the *Childhood Disorganization and Role Reversal Scale (CDRR)*, to assess for the complexity of those attachment constructs in young adults. This study aimed to assess the psychometric properties of the CDRR using two separate samples of 750 and 656 undergraduate students (601 females; $M_{age} = 18.68$, 66.4% Caucasian; 531 females; $M_{age} = 18.68$ years, 63.6% Caucasian; respectively), and a community sample of 96 participants (81 females, $M_{age} = 19.27$, 65.6% Caucasian). The results of the Principal Component Analysis (PCA) revealed a four-factor structure for both CDRR parent versions. The CDRR mother version includes the Disorganization/Punitive, Mutual Hostility, Affective Caregiving, and Appropriate Boundaries scales, while the CDRR father version includes the Disorganization, Affective Caregiving, Appropriate Boundaries, and Punitive scales. Overall, support was provided for the psychometric properties of the CDRR. For instance, the CDRR scales demonstrated adequate structural stability (confirmatory factor analyses), internal consistency (Cronbach's coefficient alphas ranged from .78–.95 for mother scale, and .75–.96 or father scale), temporal reliability (intraclass correlation coefficient ranged from .68–.89 for mother scale, and .69–.87 for father scale), criterion-related validity, convergent validity, and discriminant validity. The CDRR will assist researchers in broadening the understanding of psychological outcomes of disorganized and controlling attachment representations in young adulthood.

Keywords Attachment · Disorganized/controlling attachment · Parentification · Scale development · Young adults

It has been shown that infant disorganization, a dysfunctional attachment system whereby the child engages in contradictory or disorganized behaviours in the presence of the parent, is a key predictor of psychopathology in children and adults (Lyons-Ruth and Jacobvitz 2008; Main and Solomon 1990). Infant disorganization may develop into a role reversed or controlling attachment pattern during the preschool years, which is manifested in caregiving or punitive behaviours and labelled as 'controlling/caregiving attachment' and 'controlling/punitive attachment', respectively (Main and Cassidy 1988; Moss et al. 2005; Wartner et al. 1994). Corresponding to Bowlby's theoretical description (1977, 1980), the attachment literature defines controlling/caregiving attachment as the abdication of a child's own attachment needs to respond to the emotional or physical needs of their parents, such as cheering them up or providing them with emotional support (see Moss et al. 2011). Controlling/punitive attachment is another form of role reversal involving a child controlling interactions with their parents through being hostile and demeaning towards them (see Moss et al. 2011). Studies have found associations between internalizing and/or externalizing problems in disorganized and controlling/punitive children, especially in combination with disorganized behaviours; however, there have been inconsistent findings between caregiving behaviours in childhood and problems in social adaptation (Bureau et al. 2009a; Moss et al. 2004; O'Connor et al. 2011). These inconsistent findings on controlling/caregiving attachment may be due to the under-reporting of these behaviours as adult informants may not perceive them as harmful (O'Connor et al. 2011).

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Internal working models or attachment representations provide a systematic manner in which an individual processes attachment-related information (Main et al. 1985). They are thought to develop in early childhood and to be based on caregiver's availability and responsiveness to their child's attachment needs across repeated interactions and overt or covert discussions of emotions with their child (Bowlby 1980). Internal working models of caregiving (or disorganized and punitive) attachment may be more salient in adolescence or young adulthood when there are increased desires to achieve independence from parents, and to develop intimate relationships outside the family. The association between these representations and psychological problems have not been readily investigated in young adults, presumably from the absence of a convenient measure that assesses for disorganized and role reversed attachment representations in young adults.

Main and Hesse (1990) stated that infant disorganization results from a paradox created when the attachment figure is both the child's object of comfort and the source of its distress by exhibiting frightening or frightened behaviours. These parental behaviours result in the infant's attachment system breaking down, as the infant wants to approach their attachment figure for comfort, yet fears that very same person. Moreover, George and Solomon (2008) suggested that in addition to frightened and frightening behaviours, a child's perception of 'failed protection' by their parent (e.g., feeling abandoned) leaves him/her disorganized. Lyons-Ruth et al. (1999) expanded on Main and Hesse's theory and hypothesized that infant disorganization may develop from extreme maternal insensitive behaviour, such as maternal disorientation or withdrawal. This may impact the infant's ability to apply a consistent and effective attachment strategy to reduce their attachment distress (Lyons-Ruth et al. 1999; Lyons-Ruth and Jacobvitz 2008). Taking these complementary theories together, it is hypothesized that disorganization may develop when an infant's caregiver frightens them or when their caregiver is unable to lower the activation of their infant's attachment system (Cyr et al. 2010). There is growing evidence that childhood disorganized attachment is a key predictor of negative outcomes, such as internalizing and externalizing problems (see Lyons-Ruth and Jacobvitz 2008 for a review). Fifteen percent of infants in a normative population are identified as disorganized, and this number increases to 25% in low socioeconomic status (SES) samples, and to 48% in maltreated samples (van IJzendoorn et al. 1999).

Longitudinal studies have found that disorganization in infancy generally transforms into a controlling strategy by the end of the preschool period (Main and Cassidy 1988; Moss et al. 2005; Wartner et al. 1994). For instance, approximately 75% of disorganized 3-year old children were identified as controlling at 6 years of age in a Canadian sample (Moss et al. 2005). Controlling strategies refer to children's behaviours that have the purpose, intentional or not, to take charge of the interactions with their caregivers, such that these children assume a parent-like role with their caregivers (Main and Cassidy 1988). With the increasing ability of preschoolers to coordinate their behaviours to achieve attachment-related goals (Bowlby 1969/1982), it has been hypothesized that preschoolers who were identified as disorganized as infants, develop controlling behaviours to gain more control of their stressful environment, and thereby regulate their own emotional states as they cannot be regulated through the attachment to their caregiver (Solomon et al. 1995). Controlling attachment, also referred to as role reversal, consists of two subtypes: controlling/caregiving and controlling/punitive.

Bowlby (1977) introduced the concept of role inversion/role reversal and compulsive caregiving that involves a child providing care to parents in contrast to receiving care from them. Bowlby (1980) observed that childhood role reversal or compulsive caregiving emerged in families experiencing parental death, such as a widowed parent confiding in their child, expecting their child to hold non-age-appropriate responsibilities, or perceiving their child as a substitute to their deceased spouse. Bowlby (1977, 1980) also theorized that role inversion might result in compulsive caregiving (i.e., providing excessive care) in conditions where a parent pressures their child to care for him/her, provides inadequate caregiving, suffers from depression or from a disability, or willingly accepts the care from their child. The term 'controlling/caregiving attachment' has been used interchangeably with 'role reversal' and 'compulsive caregiving' in the attachment literature. Controlling/caregiving children have been reported to play a supportive role in the emotional lives of their parent, such as acting as their companion, a confidant or a substitute to their spouse (Moss et al. 2011). Researchers observed that these children tend to be excessively positive with their parents in a non-authentic manner (Main and Cassidy 1988). Bowlby (1969/1982) noted that role reversed children suppress their attachment needs for comfort and protection to engage their parents. As such, caregiving children are assumed to regulate their own affect and to ensure their parent's emotional and physical availability by lowering their parent's distress (Moss et al. 2011; Solomon et al. 1995).

Related to the concept of controlling/caregiving attachment is the term 'parentification' (Boszormenyi-Nagy and Sparks 1973), stemming from family systems theory, that describes parent-child interactions where the child is expected to assume a parental role and engage in instrumental caregiving and/or expressive caregiving (Boszormenyi-Nagy and Sparks 1973). Attachment-related variables appear to be potential mediators between parentification and its association with negative mental health

outcomes. For instance, one study found that attachment anxiety fully mediated the relationship between role reversal toward mothers and depressive symptoms (Katz et al. 2009). In another study, perceived unfairness mediated the relationship between parentification and mental health symptoms alone and combined with problems in the differentiation of self (Jankowski et al. 2013). The authors suggest that the variability in the influence of parentification depends partially upon the individual's belief that the task is fair and his or her ability to regulate their emotions, which complements attachment theory as perceived unfairness may be a manifestation of a child's unfulfilled need for a balance between autonomy and connection.

Bowlby (1980) alluded to the concept of controlling/punitive attachment in his case studies; however, there still lacks a strong theoretical discussion on the origins of punitive attachment. Children identified with controlling/punitive attachment have been noted to control the interactions with their parents in a hostile, aggressive, humiliating, commanding, and scolding manner (Main and Cassidy 1988; Moss et al. 2011). A longitudinal study found that punitive behaviours in middle childhood were related to maternal hostility and disrupted communication in infancy (Bureau et al. 2009b). This suggests that punitive behaviours may emerge when children reside in a chaotic home environment and have to protect themselves from their parents, whereas caregiving behaviours may be related to providing care to less capable parents.

Disorganized attachment in infancy and preschool years has been consistently linked to various risk factors, including low family income, parental mental health problems, and marital conflict, both in infancy (see van IJzendoorn et al. 1999) and preschool (see Moss et al. 2011). Another study found that maternal insensitivity and hostility was related to controlling/caregiving and controlling/punitive attachment and maternal withdrawn behaviours were related to controlling/caregiving attachment (Easterbrooks et al. 2012). In line with the previous study, maternal depression was associated with the combined disorganized/controlling group (i.e., a combination of disorganized, controlling-caregiving, controlling-punitive and controlling-mixed attachment) (O'Connor et al. 2011). Within the parentification literature, several family stress variables have been related to a child providing excessive care to their parents, such as parental mental health problems, parental substance abuse, parental history of abuse, parental separation or divorce, and parental marital conflict (see Kerig 2005).

Currently, there is only one measure that assesses both disorganization and controlling attachment in adolescence and young adulthood, namely the Goal-Corrected Partnership in Adolescence Coding System (GPACS; Obsuth et al. 2014). The GPACS is an observational measure that assesses controlling behaviours between adolescents and parents. It involves an adolescent-parent reunion and a discussion task concerning a topic of disagreement that are coded. The GPACS provides a rich source of information beneficial for research and it offers classifications that are clinically relevant. However, it may not always be a feasible option as it requires the observations between young adults and their parents and is time and labour intensive. The Adult Attachment Interview (AAI: George et al. 1985/1996) is another valuable instrument to assess for attachment mental representations. Among the AAI classifications, the unresolved attachment state of mind most closely resembles disorganized attachment, but it is only coded when an individual reports a past trauma or the loss of a significant person. The AAI has a supplemental Experiences scale that assesses for role reversal; however, unlike the GPACS, it does not distinguish between caregiving and punitive behaviours.

Although parentification measures are conceptually relevant to controlling/caregiving attachment, they do not assess disorganized and controlling attachment representations in young adults, nor the co-occurrence of punitive and caregiving behaviours. Of importance, while parentification measures assess for behaviours comparable to controlling/caregiving attachment, items place greater emphasis on the nature and type of parentification behaviours. Central to attachment theory is the importance of the individual's representations of attachment-related experiences, rather than the reliance on reports of having particular experiences (see Bowlby 1969/1982). As such, a measure designed to assess the several constellations of controlling attachment representations that result from disorganized attachment, from an attachment theory point of view, should address the individual's affective reactions or mental representations, such as feelings of burden, resentfulness, or fear of their parent. For instance, the type or form of caregiving behaviour is not essential to the concept of role reversal; however, of importance are feelings of emotional burden from providing emotional support to parents (Main and Goldwyn 1985/1995).

We developed the *Childhood Disorganization and Role Reversal Scale – Initial Version* (CDRR) to conveniently assess young adults' current disorganized and controlling attachment representations using a self-report scale. Our measure is unique in its focus on developing separate scales for mother and fathers. This study involves six objectives, namely, developing scale items based on a comprehensive review of the attachment and parentification literature and relevant measures, assessing the structural stability of the CDRR, determining the internal consistency of the items on the CDRR scales, investigating the 3 to 4-month temporal stability of the CDRR scales, assessing the convergent and discriminant validity of selected scales, and assessing the criterion-related validity.

Method

Participants

Sample 1

Participants included 750 undergraduate students at a Canadian university that were enrolled in an introductory undergraduate psychology course. Participants were between the ages of 17 and 25 (601 females; $M_{age} = 18.68$ years, SD = 1.34). Most of the participants were Caucasian (66.4%), while the remaining participants were Asian (11.3%), Middle Eastern (6.8%), Black (5.3%), mixed ethnicity (2.4%), Aboriginal/First Nations/Métis (1.2%), Hispanic (1.1%), or another ethnicity not listed (4.4%). The sample's demographics are representative of the population from which they were recruited.

Sample 2

Participants consisted of 656 undergraduate students from a Canadian university, ranging between the ages of 16–24 (531 females; $M_{age} = 18.68$ years, SD = 1.29). The majority of the participants were Caucasian (63.6%), while a minority were Asian (11.4%), Black (7.6%), Middle Eastern (7.6%), Aboriginal/First Nations/Métis (1.4%), Hispanic (1.4%), mixed ethnicity (4.7%) and another ethnicity not listed (1.4%).

Sample 3

Participants consisted of 96 participants between the ages of 17–26 (81 females;$M_{age} = 19.27$, SD = 2.13). The sample was derived from three distinct sample pools: a subsample of students from Sample 1 ($n = 27$) and Sample 2 ($n = 50$), and participants ($n = 19$) recruited from the community to increase the sample size. The majority of the participants were Caucasian (65.6%), while a minority were Asian (13.5%), Black (9.4%), Middle Eastern (2.1%), Hispanic (1.0%), mixed ethnicity (7.3%) and other ethnicities not listed (3.1%).

Procedure

Participants from Sample 1 were recruited in the Fall semester of 2011 and the inter semester of 2012, while participants from Sample 2 were recruited in the Fall semester of 2012 and Winter semester of 2013. To partake in the study, students must have been less than 25 years old and able to read and write in English. Participants completed the CDRR and answered sociodemographic questions. They received one credit for participation. The university's Ethics Board approved procedures involving all samples used in this study. Sample 3 consists a subgroup of participants from Samples 1 and 2, as well as a community sample. For instance, upon completion of the questionnaires, participants were invited to participate in the second phase of the study. At the 3 to 4-month period, interested participants were contacted through email to complete the CDRR questionnaire online. Online advertisements were used to recruit participants from the community between the ages of 18 to 25. Participation consisted of completing the CDRR at two different time points within a 3 to 4-month interval.

Measures

Childhood disorganization and role reversal scale—initial version (CDRR)

The creation of items of the CDRR was based on a comprehensive review of the disorganized and controlling attachment literature, parentification literature and relevant existing measures to the study. Unique to the CDRR, its development was guided by the re-conceptualization of the role of fathers within attachment theory as recent studies have not only found that fathers play an important role in their child's attachment (Bretherton 2010), but that they may provide unique contributions (Grossmann et al. 2008). Factor analysis was conducted separately for each parent to create the opportunity to arrive at unique factors for each parent. The CDRR was pilot-tested twice to improve its readability and clarity using undergraduate and graduate students. This process resulted in 161 items that were rated on a 5-point Likert scale ranging from 'Completely agree/Always' to 'Not at all/Never', whereby higher scores indicate higher levels on each scale.

Sociodemographic questionnaire

The authors developed this questionnaire for the purposes of this study to obtain participants' background information (e.g., age, gender, language, childhood family composition, identification of primary maternal and paternal caregiver, current living arrangements) and information on childhood major family life events. The list of major life events was based on studies of childhood family risk variables related to disorganized/controlling attachment and parentification. Participants were asked to indicate whether they experienced any of the following events in their childhood (i.e., 12 years or younger) by indicating 'yes' or 'no': (1) period of mental illness of a caregiver; (2) substance abuse of a caregiver; (3) conflict between caregivers; (4) domestic violence between caregivers; and (5) divorce or separation of caregivers.

Relationship with parents scale (RPSF/RPSM)

This is a 21-item retrospective self-report measure (Alexander 2003) assessing emotional parentification. It includes a mother (RPSM) and father scale (RPSF). Respondents rate

their agreement to the items on a 5-point Likert scale with scores ranging from 0 to 105. Cronbach's alpha revealed good internal consistency for both scales (Alexander 2003). In the current sample, both parent scales showed excellent internal consistency (Cronbach's alpha at .91 for both scales).

The parentification inventory

This is a retrospective self-report measure (PI: Hooper 2009) assessing childhood parentified behaviours and perceived benefits related to this role. It consists of three scales: Parent-focused Parentification (PI-PFP), Sibling-focused Parentification (PI-SFP) and Perceived Benefits of Parentification (PI-PBP). The inventory includes 22 items that are rated on a 5-point Likert scale. In the current sample, the internal consistency of the scales was assessed by calculating Cronbach's alpha coefficients. The internal consistency was good on the PI-PFP scale (.81) but questionable on the PI-SFP scale (.61), as such results involving the PI-SFP should be interpreted with caution.

Data Analyses

Prior to analysis, the data were screened for univariate and multivariate outliers (when appropriate), missing data and screened for linearity and normality. For objective 1, pairwise deletion was used to treat missing data. The data met the assumptions for conducting a principal components analysis (PCA). For the remaining objectives, missing data (all below 5%) was treated with the estimated maximization (EM) method. Objective 1 involved conducting a PCA with Varimax rotation for each parent scale to determine the number of factors on the CDRR. For objective 2, a CFA using maximum likelihood estimation was conducted for each parent version to cross-validate the factor structures derived from the initial PCA using AMOS. 'Parcels' were created for each CDRR scale and were used as the unit of analysis to avoid psychometric and statistical problems resulting from performing a confirmatory factor analysis (CFA) at the item-level (Little et al. 2002). Internal consistency of the CDRR Scales were determined by calculating Cronbach's coefficient alpha and average inter-item correlation coefficients for objective 3. For objective 4, temporal stability was assessed by calculating Pearson's product-moment correlation coefficient for relative stability, and intra-class correlation coefficient (ICC) for absolute stability using a two-way mixed ANOVA model. ANOVAs and MANOVAs were conducted for Objectives 5 and 6 (validity testing).

Results

Objective 1 involved Sample 1. The plot of the scree test for both CDRR parent versions from the initial PCAs suggested a three or four-factor model. The three-factor model and four-factor model were compared based on the interpretability of the factors, with the four-factor model providing the most meaningful factors and the best coverage of the latent components for both CDRR parent versions. The final model (see Table 1) included items loading at .40 or above and cross-loading items with loading differences at or below .15. The item refinement process resulted in a four-factor solution with 62 items for the mother scale, accounting for 43.14% of the variance, and a four-factor solution with 70 items for the father scale, accounting for 46.24% of the variance.

As predicted, the PCA revealed factors consistent with the caregiving, punitive, and disorganization constructs for both parents, with some similarities and differences in item content. For the CDRR mother version, the first factor,

Table 1 Summary of principal components analysis results and Cronbach's alpha for the items of the disorganization and role reversal scale

Factor	Eigenvalues	% of variance	Loading range[a]
Mother scale			
Disorganization/Punitive[b]	16.62	26.81	.49–.73
Mutual hostility[c]	4.16	6.71	.50–.75
Affective caregiving[d]	3.39	5.47	.48–.65
Appropriate boundaries[e]	2.57	4.15	.41–.67
Father scale			
Disorganization[f]	20.61	29.44	−.44–.82
Affective caregiving[g]	5.65	8.08	.50–.71
Appropriate boundaries[h]	3.58	5.11	.42–.66
Punitive[i]	2.53	3.61	.45–.73

[a]Ranges of rotated factor loadings

[b]Item examples: 'I felt that my caregiver did not really like me', 'Sometimes I had to be in charge of my caregiver'

[c]Item examples: 'My caregiver and I had our share of yelling matches', 'I had a hard time calming down when I was really upset at my caregiver'

[d]Item examples: 'I was attentive to how my caregiver was feeling', 'I felt at my best when I could help my caregiver'

[e]Item examples: 'My caregiver set appropriate limits for me (e.g., television watching, Internet usage)', 'My caregiver did not expect me to keep him/her company'

[f]Item examples: 'My caregiver's sense of humor could be mean at times', 'My caregiver displayed odd behaviors'

[g]Item examples: 'I was more concerned about attending to my caregiver's needs than of getting help for mine', 'I was over involved in my caregiver's personal issues'

[h]Items examples: 'If I misbehaved, my caregiver was comfortable to exercise authority', 'In general, my caregiver was concerned about my safety'

[i]Item examples: 'I would lecture my caregiver if he/she did something I did not agree with', 'If my caregiver did something wrong, I would express my disagreement towards his/her actions'

Table 2 Means, standard deviations, and intercorrelations among scales of the CDRR

CDRR scales	1	2	3	4	5	6	7	8
Mother scale								
1. Disorganization/Punitive	–	.29***	67***	−.25***	–	–	–	–
2. Affective caregiving		–	.19***	.07	–	–	–	–
3. Mutual hostility			–	−.12**	–	–	–	–
4. Appropriate boundaries				–	–	–	–	–
Father scale								
5. Disorganization	–	–	–	–	–	.49***	.40***	−.26***
6. Affective caregiving	–	–	–	–		–	.40***	−.02
7. Punitive	–	–	–	–			–	.03
8. Appropriate boundaries	–	–	–	–				–
Mean	41.15	26.90	23.94	39.26	68.20	30.37	16.75	24.95
(SD)	(16.34)	(7.10)	(8.73)	(8.86)	(26.00)	(10.59)	(5.76)	(5.43)

Depending on variable pairings, sample size ranged from 515 to 653 participants

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

named 'Disorganization/Punitive', fit with the disorganization and punitive constructs (e.g., controlling behaviours towards mother, derogatory thoughts or behaviours towards mother, lack of parental competencies, maternal frightening behaviours, as reported by youth). The second factor, named 'Mutual Hostility', consisted of mutually aggressive behaviours between mother and child, and a lack of emotion regulation from both members of the dyad. The third factor, 'Affective Caregiving', focused on the emotional caregiving construct. The last factor, 'Appropriate Boundaries', was unexpected but coherent with attachment theory and focused on appropriate boundaries between a mother and child and a mother holding an authoritative role. For the CDRR father version, the first factor, 'Disorganization', related to the disorganization construct, and the second factor, 'Affective Caregiving', related to the affective caregiving construct. Similar to the mother version, the content of the third factor, 'Appropriate Boundaries', was unexpected but consistent with attachment theory and focused on appropriate boundaries between father and child. The last factor, 'Punitive', was related to the punitive construct.

Correlations among the CDRR scales for both parent versions are presented in Table 2, as well as the mean and standard deviation of each CDRR scale. For the CDRR mother version, the scales were minimally related to one another, with the exception of the Mutual Hostility scale having a large and positive association to the Disorganization scale. For the CDRR father version, the strength of the correlations between the scales was generally moderate; however, the Appropriate Boundaries scale was unrelated to the Punitive and to the Affective Caregiving scales.

Objective 2 consisted of participants from Sample 2. The four-factor model showed adequate to good fit to the data for both the CDRR mother version: $\chi^2(48) = 249.45$, $p < .001$, CMIN/DF = 5.20; RMSEA = .08; SRMR = .06; TLI = .94; CFI = .96; RNI = .95, and the CDRR father version: $\chi^2(48) = 228.33$, $p < .001$, CMIN/DF = 4.76; RMSEA = .08; SRMR = .06; TLI = .95; CFI = .96; RNI = .95. Overall, standardized factor loadings for the CDRR mother and father versions (Figs. 1 and 2), demonstrated similar parameter estimates to the results observed in the original PCAs, yielding strong support for the four-factor structure. Although, it should be noted that the factor loading of Parcel 3 on the Appropriate Boundaries father scale was noticeably low.

Objective 3 consisted of Sample 1. All CDRR scales for both parent versions demonstrated adequate internal consistency based on the criteria of a Cronbach's coefficient alpha above .70 (Nunnally and Bernstein 1994) and an average inter-item correlation coefficient above .20 (Robinson et al. 1991) (See Table 3).

Objective 4 involved Sample 3. As Sample 3 consists of two distinct subsamples, an undergraduate group and a community group, prior to using the aggregated sample we examined whether the subsamples differed on socio-demographic variables, namely, gender, ethnicity, primary language, childhood family structure, marital status, current accommodations, and time interval between testing points and on the CDRR scales. No differences were found between the two groups with the exception that the community group was older ($M_{age} = 21.53$, SD = 3.01; $M_{age} = 18.71$, SD = 2.13, $p < 0.001$) and had a higher educational attainment than the undergraduate group ($p < 0.001$).

Table 3 presents the Pearson's product-moment correlation coefficients between CDRR mother and father scales at Time 1 and Time 2 (Mean time interval = 112.41 days, SD = 42.36 days) and the Absolute Agreement intraclass

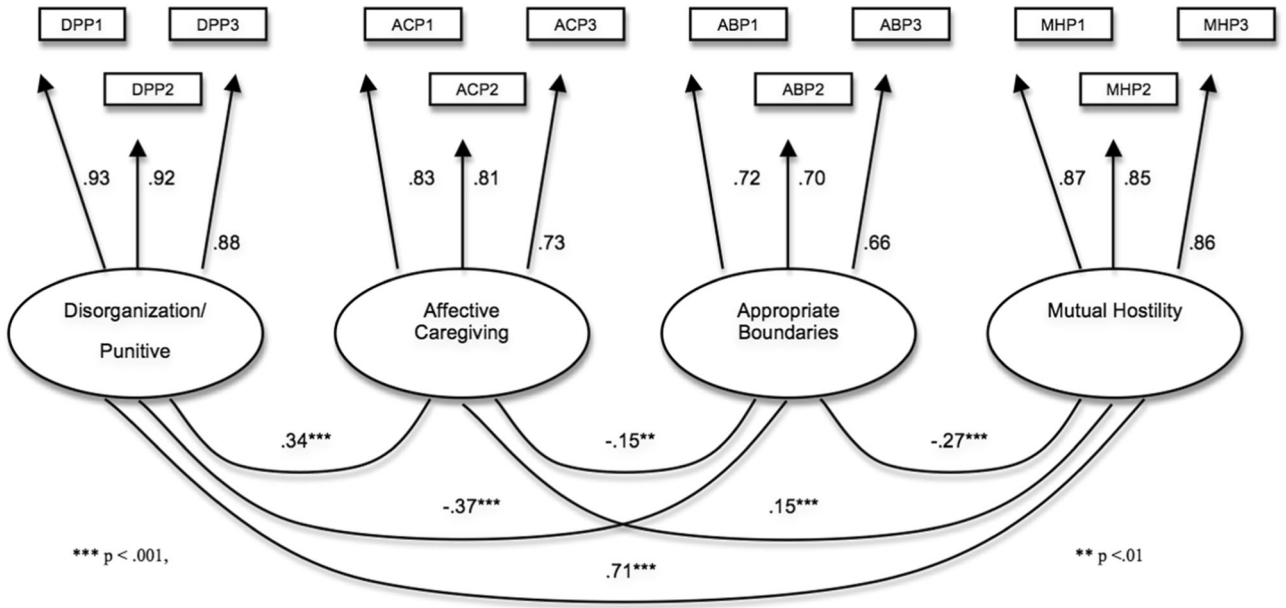

Fig. 1 Parameter estimates of the CDRR mother version using confirmatory factor analysis (CFA) ($N = 565$)

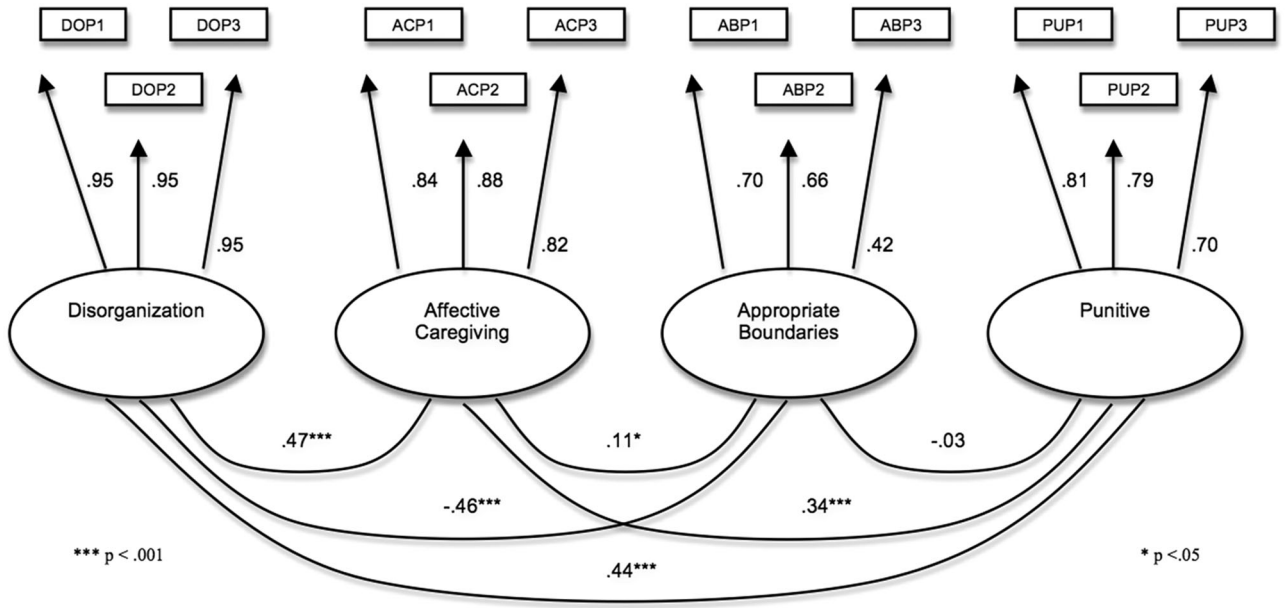

Fig. 2 Parameter estimates of the CDRR father version using confirmatory factor analysis (CFA) ($N = 643$)

correlation coefficients for single measures using the two-way mixed ANOVA model for each CDRR scale. Overall, for the CDRR mother version, the Disorganization/Punitive and Mutual Hostility scales demonstrated excellent temporal reliability and the Affective Caregiving and Appropriate Boundaries scales demonstrated moderate temporal reliability. For the CDRR father version, the Disorganization scale demonstrated excellent temporal consistency, while the Punitive, Appropriate Boundaries and Affective Caregiving scales demonstrated moderate temporal reliability. Overall, the CDRR demonstrated adequate temporal stability for both parent versions.

Using Sample 2, convergent and discriminant validity was assessed for the Affective Caregiving mother and father scale. Although the emergence of the Appropriate Boundaries subscale was unexpected, this subscale fits within attachment theory and we expected that this construct would not be related to or negatively related to reports of

Table 3 Test-retest reliability and internal consistency results for the CDRR scales

CDRR								
	Mother scale				Father scale			
	Disorganization/ punitive	Affective caregiving	Mutual hostility	Appropriate boundaries	Disorganization	Affective caregiving	Punitive	Appropriate boundaries
Internal consistency ($n = 726$)								
Cronbach's α	.95	.79	.90	.78	.96	.91	.80	.75
Inter-item *r* (Avg.)	.41	.28	.44	.23	.43	.35	.34	.30
Test-retest reliability ($n = 96$)								
Pearson's *r*	.89***	.74***	.84***	.68***	.87***	.69***	.66***	.69***
ICC (3,1) (95% CI)	.89	.69	.83	.68	.87	.66	.65	.69
	(.84–.95)	(.45–.77)	(.75–.88)	(.55–.77)	(.80–.91)	(.50–.76)	(.52–.75)	(.57–.78)

ICC = Absolute agreement intraclass correlation coefficient for single measures using the two-way mixed ANOVA model (ICC 3,1)

***$p < 0.001$

Table 4 Means, standard deviations, and correlations among selected scales of the CDRR and parentification measures

CDRR								
Parentification measures	Mother scales ($N = 645$)				Father scales ($N = 632$)			
	AC (*M*,SD)	AB (*M*,SD)	*M*	SD	AC (*M*,SD)	AB (*M*,SD)	*M*	SD
PI-PFP	.55***	−.20***	1.96	.55	.61***	−.05	1.97	.55
PI-SFP	.35***	−.10**	2.33	.54	.37***	.04	2.33	.54
RPSM	.46***	−.36***	39.13	14.48	.58***	−.18***	38.97	14.43
RPSF	.41***	−.32***	35.69	12.71	.68***	−.11**	35.70	12.82
M	27.73	39.07			33.33	25.51		
SD	6.91	7.36			10.59	4.27		

AC Childhood Disorganization and Role Reversal scale—affective caregiving, *AB* Childhood Disorganization and Role Reversal scale—appropriate boundaries, *PI-PFP* parentification inventory—parent-focused parentification, *PI-SFP* sibling-focused parentification, *RPSM* Relationship with Parents Mother scale, *RPSF* Relationship with Parents Father scale

**$p < 0.01$; ***$p < .001$

childhood parentification as a parentified parent-child relationship is defined as lacking proper parent-child boundaries. Of the limited validation studies within the parentification and role reversal literature, correlation coefficients ranging from .44 to .68 were found between the Parentification Inventory (Hooper 2009), Parentification Scale (Mika et al. 1987) and the Parentification Questionnaire (Jurkovic and Thirkield 1998) (Hooper and Doehler 2012; Hooper et al. 2011). Using those results as a basis for evaluating the magnitude of the correlation coefficient for validity testing, a value of .44 or greater was used to indicate adequate convergent validity.

The Affective Caregiving mother and father scales of the CDRR demonstrated adequate convergent validity (see Table 4), with statistically significant correlation coefficients above the cut-off value of .44, with the exception of the RPSM scale that showed a moderate association and neared the cut-off value. The Affective Caregiving father scale demonstrated a strong association to the parentification measures, and the Affective Caregiving mother scale showed a moderate to strong association to those measures. Discriminant validity for the Appropriate Boundaries mother and father scales were supported by finding significantly negative correlations or non-significant correlations to all parentification measures. As predicted, the association between the Affective Caregiving mother and father scales and the sibling-focused parentification scale were moderate and positive. As hypothesized, it was found that the Affective Caregiving mother and father scale had a larger association to parent-focused parentification than to the sibling-focused parentification (Steigner's $Z_{\text{mother}} = 6.24$, $p < .001$, two-tailed; Steigner's $Z_{\text{father}} = 7.80$, $p < .001$, two-tailed). However, these results should be interpreted with caution given that the internal consistency of sibling-focused parentification measure in the current sample was deemed questionable (Cronbach's alpha = .61).

Table 5 Variations on the disorganized and controlling scales of the CDRR mother version as a function of the absence/presence of childhood risk ($N = 719$)

CDRR scales	Yes *M*(SD)	No *M*(SD)	Overall F^a (η^2_p)
Divorce (multivariate omnibus[b]: 1.42; $\eta^2_p = 0.006$)			
Disorganization/Punitive	46.60 (17.28)	39.84 (13.70)	.03 (.001)
Affective caregiving	27.85 (6.98)	26.63 (6.96)	.02 (.001)
Mutual hostility	25.66 (9.18)	23.50 (8.44)	2.28 (.003)
Financial problems (multivariate omnibus: 7.11***; $\eta^2_p = .03$)			
Disorganization/punitive	47.54 (16.95)	38.97 (13.10)	19.63*** (.03)
Affective caregiving	28.50 (6.78)	26.50 (8.56)	5.81* (.008)
Mutual hostility	26.34 (6.94)	23.06 (8.40)	6.17* (.009)
Mental health (multivariate omnibus: 7.99***; $\eta^2_{p=}.03$)			
Disorganization/Punitive	50.46 (18.73)	39.66 (13.43)	20.90*** (.03)
Affective caregiving	29.11 (7.31)	26.53 (6.89)	6.26* (.009)
Mutual hostility	28.52 (9.83)	23.19 (8.22)	13.54*** (.02)
Substance abuse (multivariate omnibus: 9.16***; $\eta^2_p = .04$)			
Disorganization/Punitive	56.57 (19.32)	28.41 (16.84)	26.40*** (.04)
Affective caregiving	39.79 (13.47)	26.70 (6.97)	.10 (.001)
Mutual hostility	30.46 (9.78)	23.37 (8.31)	10.27*** (.01)
Domestic conflict/violence (multivariate omnibus: 22.30***; $\eta^2_p = .09$)			
Disorganization/Punitive	47.30 (16.70)	37.86 (12.25)	45.99*** (.06)
Affective caregiving	28.29 (7.36)	26.15 (6.65)	8.49** (.01)
Mutual hostility	27.70 (8.54)	22.04 (7.99)	58.46*** (.08)

η^2_p = partial eta-squared. Yes = Presence of a childhood negative life event. No = Absence of a childhood negative life event

[a]Univariate *F* test derived from MANOVA

[b]All multivariate omnibus tests used Wilks' Lambda statistic

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Using Sample 1, A MANOVA was performed for each CDRR parent version, with childhood risk variables as the independent variables and CDRR scales as the dependent variables to reduce to chances of Type I error. All the predictor variables (childhood risk) were dichotomous, with the exception of the family income variable. The substance abuse variable was retained as the sample size of the smallest cell was over 20 participants, suggesting that it can generalize to the population mean. As the 'domestic violence' family life event was infrequently endorsed, it was combined with the 'marital conflict' family life event as they had a similar pattern of results on the MANOVA. The family childhood risk variable on family income was dichotomized as the cell numbers were low. The response 'Sometimes' or 'Often' was coded as 'Income problems', and 'Never' or 'Don't know' was coded as 'No income problems'.

The omnibus multivariate tests found that all five childhood risk variables, namely, divorce, financial problems, parental mental health, parental substance abuse, and domestic conflict/violence, significantly accounted for variations on the composite controlling/disorganized attachment variable, with the exception of divorce which was not related to the CDRR mother scales (see Tables 5 and 6). When examining the univariate tests, on both CDRR parent versions, parental domestic conflict/violence and parental mental health problems were related to all disorganized and controlling scales (i.e., all scales except Appropriate Boundaries). Financial problems were related to the disorganization scales, Affective Caregiving mother and father scales and to the Mutual Hostility mother scale. Parental substance abuse was related to the disorganization scales and to the Mutual Hostility mother scale. Scores on the Appropriate Boundaries mother and father scales had fewer associations to the childhood risk variables than the disorganized and controlling CDRR mother and father scales (see Table 7). Only financial problems, substance abuse and divorce (father only) were related to lower scores on the Appropriate Boundaries scales.

Discussion

There is a need in the attachment literature for a convenient self-report measure that assesses for young adults' current perceptions of childhood disorganized and controlling

Table 6 Variations on the disorganized and controlling scales of the CDRR father version as a function of the absence/presence of childhood risk ($N = 715$)

CDRR Scales	Yes *M*(SD)	No *M*(SD)	Overall F^a (η^2_p)
Divorce (multivariate omnibus[b]: 5.67***; $\eta^2_p = .02$)			
Disorganization	81.13 (28.77)	65.73 (23.36)	1.66 (.002)
Affective caregiving	30.21 (11.25)	30.29 (9.90)	5.92* (.008)
Punitive	16.95 (5.76)	16.59 (5.51)	2.86 (.004)
Financial problems (multivariate omnibus: 12.08***; $\eta^2_p = .05$)			
Disorganization	81.58 (29.23)	64.30 (22.06)	23.10*** (.03)
Affective caregiving	32.79 (11.43)	29.54 (9.55)	5.80* (.008)
Punitive	16.72 (5.67)	16.59 (5.49)	1.60 (.002)
Mental health (multivariate omnibus: 4.01**; $\eta^2_p = .02$)			
Disorganization	82.21 (30.12)	66.23 (23.58)	11.20*** (.02)
Affective caregiving	32.91 (11.08)	29.94 (9.95)	4.40* (.006)
Punitive	18.27 (6.14)	16.44 (5.45)	4.52* (.006)
Substance abuse (multivariate omnibus: 6.00***; $\eta^2_p = .03$)			
Disorganization	93.61 (29.59)	66.30 (23.52)	17.82*** (.03)
Affective caregiving	34.64 (14.05)	29.98 (9.72)	2.84 (.004)
Punitive	18.76 (5.96)	16.50 (5.49)	3.73 (.005)
Domestic conflict/violence (multivariate omnibus: 28.45***; $\eta^2_p = .11$)			
Disorganization	82.10 (26.86)	61.49 (20.84)	80.02*** (.10)
Affective caregiving	32.37 (10.84)	29.31 (9.61)	12.37*** (.02)
Punitive	18.32 (5.95)	15.86 (5.16)	30.36*** (.04)

Note: η^2_p = partial eta-squared. Yes = Presence of a childhood negative life event. No = Absence of a childhood negative life event

[a]Univariate *F* test derived from MANOVA

[b]All multivariate omnibus tests used Wilks' Lambda statistic

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 7 Variations on the Appropriate Boundaries CDRR Scales as a function of the absence/presence of childhood risk ($N = 719$)

CDRR						
	Mother scale *(N = 719)*			Father scale *(N = 715)*		
Predictor variables	Yes *M*(SD)	No *M*(SD)	Overall F^a (η^2_p)	Yes *M*(SD)	No *M*(SD)	Overall *Fa* (η^2_p)
Divorce	39.18 (8.95)	39.21 (8.69)	.60 (.001)	23.34 (5.26)	25.26 (5.20)	6.24* (.009)
Financial problems	37.28 (8.10)	39.72 (8.83)	7.77** (.01)	23.70 (5.10)	25.31 (5.25)	6.27* (.009)
Mental health	39.27 (18.80)	39.21 (8.74)	.27 (.001)	25.10 (4.65)	24.95 (5.34)	1.69 (.002)
Substance abuse	35.41 (6.82)	39.46 (8.78)	7.85** (.01)	22.32 (3.95)	25.15 (5.28)	6.68** (.009)
Domestic conflict/violence	38.99 (8.12)	39.37 (8.96)	.02 (.001)	24.39 (5.08)	25.28 (5.28)	.25 (.001)

η^2_p = partial eta-squared. Yes = Presence of a childhood negative life event. No = Absence of a childhood negative life event

[a]Univariate *F* test derived from ANOVA

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

attachment. We responded to this need by developing the *Childhood Disorganization and Role Reversal scale (CDRR)*. Importantly, unlike existing attachment and parentification measures that contain the same items and scales for mothers and fathers, the scales of the CDRR parent versions were independently developed to arrive at items and scales specific to each parent-child dyad. The CDRR mother and father versions include a four-factor structure and preliminary support was provided for its internal consistency, structural stability, temporal reliability and criterion-related validity, and convergent and discriminant validity (for specific scales).

The emergence of unique parent scales supports the idea that young adults endorse similarities and differences in their attachment representations with their mothers and fathers, and more importantly, that similar attachment

representations, such as reporting emotional caregiving or appropriate boundaries with parents, may be expressed differently depending on the gender of the parent. For instance, the content of the Affective Caregiving scales, which measure young adults' perceptions of providing emotional care to their parents in childhood, had similarities and differences between the parent versions. Within the mother-child relationship, participants scoring higher on this scale appeared to internalize their caregiving stance as a positive role (e.g., 'I felt at my best when I could help my caregiver'), were hypervigilant towards their mother's affective state (e.g., I was attentive to how my caregiver was feeling), and suppressed their attachment system in order to attend to their mother's needs (e.g., 'I dealt with my own distress by lowering the distress of my caregiver'). The mother appeared to engage their child in caregiving behaviours, such as being 'best friends' with their child or confiding in them on personal matters.

Caregiving towards father involved similar elements reported within the mother-child relationship, such as suppression of their attachment needs to care for their father, internalization of the caregiving role and their father engaging them in a caregiving role. However, it also involved unique elements, such as feeling pressure and responsibility to provide emotional and physical care for their fathers, perceiving the expectation to know their father's emotional state, feeling enmeshed with the emotional state of their father (e.g., 'It seemed like my world would crash when my caregiver was not happy') and sometimes having to physically control their father (e.g., 'If my caregiver was out of control, I would physically try to control him/her'). Given these differences, caregiving for fathers, in contrast to mothers (e.g., feel like best friends, feel positive in providing care), seems to be perceived as more emotionally burdening and lacking positive elements. The notion of feeling burdened by caring for parents was also found in another study on current compulsive caregiving towards parents in young adults (Meier et al. 2014). Meier and colleagues found that participants who currently felt burdened and overwhelmed by the personal needs of their parent, in contrast to those being able to distance themselves from their parent's needs, had greater psychological difficulties and experienced more family risk in childhood. It is unclear why these differences among the CDRR parent versions occurred and it would be useful for future studies to conduct a qualitative study to clarify these results. For instance, do caregiving children tend to protect their mothers by underreporting feelings of burden and pressure or are the mechanisms and consequences of caregiving towards mothers and fathers truly different? Alternatively, as the majority of the participants in this study are females, these differences may be related to differences found among father-daughter and mother-daughter relationships.

Another difference between the CDRR parent versions was the manifestation of disorganized attachment representation among mother-child and father-child relationships. Within the mother-child dyad, participants with elevated scores on the Disorganization/Punitive scale perceived their mother as immature, incompetent with parental duties, lacking warmth and care, abusive, needing emotional support, and odd. Whereas, within the father-child dyad, participants with elevated scores on the Disorganization scale perceived their fathers, like their mother, as immature, odd, and abusive. However, unlike for mothers, participants scoring high on this scale also perceived their fathers as frightening, disappointing, experiencing emotional problems, and being vulnerable. Most strikingly, disorganization with mothers involved the display of punitive behaviours, such as taking charge, being harsh, depicting their mother in a negative manner and protecting themselves. Bureau and colleagues (2009a) observed that punitive and disorganized attachment were sometimes combined in a sample of mother-child dyads. The unique combination of punitive and disorganized attachment representations in regards to children's relationship with their mothers needs to be explored in future studies. For instance, do children feel less intimidated by disorganized mothers, leading them to engage in more controlling behaviours towards their mothers than with their fathers?

An unanticipated outcome of this study was the emergence of the Mutual Hostility scale on the CDRR mother version. This scale shares items from the Punitive scale on the father version that focuses mostly on hostile behaviours towards parent directed by the child. However, unlike the Punitive scale, the Mutual Hostility scale includes items indicating a reciprocal pattern of hostile behaviours between parent and child. Although this scale was unexpected, it is consistent with attachment theory. For instance, the Goal-Corrected Partnership in Adolescence Coding System (GPACS: Obsuth et al. 2014) codes for a reciprocally punitive strategy in which a parent and child attempt to control their interactions through the expression of hostile, attacking or punishing statements. The reciprocal nature of this strategy is similar to the Mutual Hostility scale; however, seems to lack the feature of expressing hostility for the purpose of controlling the parent.

Alternatively, the differences between the Mutual Hostility and Punitive scales appear to be in accordance with Cassidy and Marvin's (1992) observation of the differences between the attachment behaviours of ambivalent-resistant and controlling-punitive preschoolers. The authors noted that although both attachment patterns may involve children's hostile behaviours such as frustration and acting-out behaviours towards their parent, which may appear to serve the purpose of controlling the parent, ambivalent-resistant

children engage in these behaviours due to their dependent and 'entangled' nature with their parent and their perception that their parent has control over him/her. Unlike ambivalent-resistant children, controlling-punitive preschoolers engage in hostile behaviours that seem to suggest that they feel 'superior' to their parent and feel that they have control over their interactions. As such, given the distinction of exhibiting hostile behaviours for the purpose of control versus dependency, it seems that the Mutual Hostility scale may be a reflection of aspects of preoccupied or anxious attachment.

Another surprising outcome from the PCA was the emergence of the Appropriate Boundaries mother and father scales. Although this study did not plan to develop a scale measuring for positive attachment mental representations, the CFA found the Appropriate Boundaries scales to be fairly stable for both parent versions. These scales are an important feature to the CDRR, as parent-child boundary dissolution or inappropriate boundaries may lead to psychological problems, while appropriate boundaries between parent and child strengthen the child's sense of autonomy, individuality and belonging (see Kerig et al. 2012). Given the breadth of coverage across the scales, the CDRR has the potential to assess for both pathological and healthy forms of attachment representations in young adults.

Limitations

This study is not without its limitations. The first limitation concerns the use of a convenience sample of undergraduate students enrolled in an introductory psychology course. It would be important to replicate the factor structure of the CDRR with a normative sample to determine the generalizability of these findings. A strength of the CDRR is the development of unique mother and father scales through separate PCAs, the items included in the PCAs were based on the attachment and parentification literature which primarily focused on the mother-child dyads. As such, there may be aspects of the father-child attachment that are not assessed by the CDRR. This study is also limited in the assessment of the convergent and discriminant validity of the scales (e.g., Punitive, Mutual Hostility, Disorganization/Punitive, Disorganization) as the literature lacks existing similar self-report measures as a comparison point, as well as its susceptibility to the influence of social desirability as it is a self-report questionnaire. It would be beneficial in future studies for these scales to be validated, preferably, with the use of observation-based measures.

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Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Ottawa's Research Ethics Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare that they have no conflict of interest.

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