

RESEARCH ARTICLE

Correlates of disrupted behaviors in high-risk and maltreating parents: A comparison of the AMBIANCE-Brief and full versions

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Abstract

No study has yet examined the convergence between the AMBIANCE-Brief's assessment of disrupted behavior and the full AMBIANCE version and its associations with child attachment and parental sensitivity among parents reported for maltreatment. Based on a sample of 71 parents and their young children receiving child protection or community services in Canada due to maltreatment or elevated risk for maltreatment, this study showed a moderate convergence between scores of the brief and full versions of the AMBIANCE, but the correspondence between the disrupted/non-disrupted classifications was weak. The AMBIANCE-Brief score was significantly associated with two subscales of the full version— affective communication errors and withdrawal. The AMBIANCE-Brief was significantly associated with child attachment. Parents of securely attached children exhibited the lowest levels of disrupted behaviors, while parents of disorganized children showed higher levels of disrupted behaviors than those of secure children. Also, the overall score and dimensions of the AMBIANCE full version were not significantly associated child attachment. Moreover, neither the brief nor the full version significantly correlated with parental sensitivity, suggesting these constructs may be distinct. These findings support the relevance of using the AMBIANCE-Brief with highly vulnerable and maltreating parents.

KEYWORDS

AMBIANCE, AMBIANCE-Brief, child attachment, child maltreatment, disrupted parental behavior, parental sensitivity

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Key Findings

1. Disrupted parental behavior, assessed with the AMBIANCE-Brief from video recordings and coded as if in real-time (as would practitioners do in applied settings), is moderately associated with the full AMBIANCE version (and the affective communication error and withdrawn dimensions), supporting the brief version's convergent validity and practical utility with maltreating or high-risk parents; however correspondence between the disrupted and non-disrupted classifications is weak.
2. Maltreating parents or those at elevated risk for child maltreatment who have secure children exhibit the lowest levels of disrupted behaviors, whereas parents of disorganized children show higher levels of disrupted behaviors than those of secure children.
3. Incorporating the AMBIANCE tool within comprehensive assessments can help practitioners recognize the potential impact of parents' own childhood trauma on the parent-child relationship, thereby providing clearer guidance for trauma sensitive and attachment-informed intervention planning.

Statement of relevance to infant and early childhood mental health

This study contributes to a deeper understanding of disrupted parental behaviors in maltreating and high-risk parents, and supports the AMBIANCE-Brief as a clinically relevant tool for assessing such behaviors in vulnerable populations. Findings have the potential to enhance practitioners' knowledge in identifying disrupted parental behaviors in relation to child development, increasing trauma sensitive and attachment-informed practices aimed at preventing the harmful effects of maltreatment on child mental health, and guiding intervention planning for this population.

1 | Introduction

Child maltreatment poses significant challenges for all societies, with worldwide prevalence rates ranging between 12% and 36% (Stoltenborgh et al., 2015). Maltreatment during infancy and early childhood incurs substantial socioeconomic costs in terms of medical care provision and social services. Most importantly, maltreatment exerts devastating effects on children's emotional, social, and cognitive development (Cicchetti & Valentino, 2015). Research indicates that these developmental problems often persist into adulthood, increasing the risk of psychopathology symptoms and substance abuse (Gilbert et al., 2009; Kaplow & Widom, 2007), and perpetuating the intergenerational cycle of maltreatment (Madigan et al., 2019, for a meta-analysis).

Considering these important repercussions, there is a pressing need for more comprehensive assessments of parenting capacities and parental problematic behaviors in order to improve intervention planning and child placement decisions in situations of child maltreatment (Cyr et al., 2022; De Haan et al., 2019). The Atypical Maternal Behavior Instrument for Assessment and Classification

(AMBIANCE; Bronfman et al., 2009–2014), which assesses parental disrupted behaviors, could prove very useful for practitioners in child protection services (CPS). Disrupted behaviors alone are NOT and should NOT be considered indicators of maltreatment. Their systematic assessment, when incorporated into comprehensive evaluations of parental risk and protective factors, can help practitioners recognize how parents' (potential) traumatic histories may manifest in ways that evoke alarm in the child. This, in turn, can provide clearer guidance for trauma sensitive and attachment-informed intervention planning. The full AMBIANCE measure requires extensive training, and its use is time-consuming. To address these limitations, the AMBIANCE-Brief was developed to facilitate practitioners' observational assessments and screening of vulnerable parents (Madigan et al., 2018). Practitioners, who have achieved reliability with an expert during training, can use the AMBIANCE-Brief to assess parental behaviors in real-time within applied settings. However, there is currently no study that has examined whether the AMBIANCE-Brief's assessment of disrupted behavior among maltreating parents converges with that of the full version, and whether it shows similar associations with correlates of the full version. Notably, disrupted parental behavior has been associated with attachment disorganization. Children with disorganized attachment fail to use coherent strategies to seek comfort from their parent when distressed. They exhibit contradictory approach behaviors (e.g., seeking proximity while avoiding the parent), disorientation, confusion, apprehension of the parent, or odd behaviors (Hesse & Main, 2006). A recent meta-analysis indicated that 64.9% of maltreated children showed

disorganized attachment, in comparison to 23.5% from the general population (Madigan et al., 2023).

To address these shortcomings, the current study examines whether the AMBIANCE-Brief is associated with the full AMBIANCE, and with parental sensitivity and child attachment in a sample of parents and young children receiving child protection or community services due to maltreatment or elevated risk of maltreatment.

1.1 | Parental disrupted behaviors

Main & Hesse (1990) suggest that when memories or thoughts of past loss and abuse resurface in parents with unresolved trauma, they may exhibit frightened or frightening (FR) behaviors, such as dissociation, excessive timidity, submissiveness toward the child, or sudden inexplicable threatening behaviors. Parents with unintegrated traumatic experiences have significant difficulty regulating attachment-related experiences and when attachment-related events and cues arise (e.g., their child shows attachment needs), overwhelming emotions and sensations may be reactivated and expressed through FR behaviors (Hesse & Main, 2006). These FR behaviors, evoking alarm in the child, also simultaneously signal parental emotional unavailability, creating a paradox whereby the attachment system impels the child to seek comfort from the very caregiver who is also the source of alarm. Hesse & Main (2006) have described this unsolvable situation as the “fright without solution” paradox. Clarifying Main and Hesse’s work, Duschinsky (2018) emphasized that children’s “fear” responses can take different forms: an automatic (biologically channeled) alarm response, the felt (phenomenological) experience of fear, the affect of unassuaged fright (when distress cannot be soothed by caregiver), and the visible signs of apprehension (directly observable fear-related behaviors). Thus, FR behaviors may evoke alarm that is consciously experienced as fear, but they may also trigger a conflict outside of awareness, either of which can contribute to attachment disorganization (Duschinsky, 2018).

Similarly, Lyons-Ruth et al. (1999), broadening Main & Hesse’s (1990) concept of FR behaviors, proposed that children may be alarmed not only by overtly FR behaviors but also from a range of disruptions in the parent-child communication. For example, contradictory parental behaviors to child’s needs, such as withdrawing from the child when the child seeks proximity, is likely to evoke alarm in the child. Lyons-Ruth et al. (1999) emphasized that regardless of the source of the child’s source of alarm, it is critical for parents to offer comfort and respond consistently to the child’s need for reassurance, as part of the repair process. However, if distressed children’s needs are met with hostility

or with helpless, withdrawn responses, this reinforces the “fright without solution” paradox, further undermining the development of an organized attachment.

In the attachment literature, disrupted or FR parental behaviors are conceptually distinct from insensitive parental behaviors (Main & Hesse, 1990). Insensitive parents are typically characterized by emotional unavailability and respond to their child’s needs in rejecting, distant, or inconsistent ways. Despite their insensitivity, these parents do not evoke alarm in the child and support to some degree the child’s emotional organization. In contrast, disrupted communication patterns and FR parental behaviors are more likely to chronically activate the child’s attachment system (Cyr et al., 2010). It appears that while insensitive parents struggle to establish a reassuring and secure relationship, those exhibiting disrupted and FR behaviors fail to protect their child from alarming experiences that often originate from their own actions or emotional unavailability, whether conscious or not. To date, relatively few studies have examined the association between disrupted or FR parental behaviors and parental sensitivity, and the results are inconsistent. One study using the full AMBIANCE with an at-risk sample of adolescent mothers showed a moderate negative association between parental sensitivity and disrupted behaviors ($r = -.49$; Moran et al., 2008). In contrast, a study using the FR measure with mothers from the Dogon ethnic group in Mali (West Africa) reported no significant association between these constructs ($r = -.05$; True et al., 2001). Using a combination of both the FR and full AMBIANCE measures through the Disconnected and extremely Insensitive Parenting coding system (DIP; Out et al., 2009) in a diverse sample including mothers with a history of childhood maltreatment, Ensink et al. (2016) found that maternal sensitivity was not significantly associated with disconnected parental behavior (more closely aligned with FR; $r = -.08$), but was negatively associated with extreme insensitivity (more closely aligned with AMBIANCE; $r = -.32$). Overall, it is not clear whether sensitivity and disrupted behaviors represent distinct dimensions of parent-child interaction quality, as previously suggested in the attachment literature (Main & Hesse, 1990). More research is needed to address this issue.

Other studies have examined the association between disrupted (-full AMBIANCE), FR or analogous behaviors (e.g. disconnected, extremely insensitive behaviors) and disorganized attachment. Meta-analytic results showed a moderate association between disrupted/FR parental behaviors and attachment disorganization ($r = .34$; Madigan et al., 2006). Both low- and high-risk samples (e.g. middle upper-class mother-infant dyads, multiproblem and adolescent mother-infant dyads) were included in this

meta-analysis, but the strength of the association between disrupted parental behaviors and attachment disorganization did not vary by risk status. Results of more recent studies suggest, however, that this association may be moderated by sample risk status. For example, a study by Out et al. (2009) with a low-risk sample showed that the level of disconnected parental behaviors was not significantly associated with infant disorganized attachment. Among a high-risk sample of asylum seekers and refugees and their children, Van Ee et al. (2016) found that disconnected and extremely insensitive parenting behaviors were associated with child attachment disorganization. Using an at-risk sample of children (maltreated or at high-risk of maltreatment), Yarger et al. (2020) found that even after an intervention that successfully decreased parental withdrawal behaviors (Full AMBIANCE), children of parents classified as disrupted were more likely to show disorganized attachment compared to those whose parents were classified as non-disrupted. Together, these findings indicate that the association between disrupted/FR parental behavior and attachment disorganization may be more pronounced in high-risk contexts, highlighting the practical and clinical value of an observational screening tool, such as the AMBIANCE-Brief, that could be used by practitioners with young children and their parents characterized by elevated risk, like those involved with CPS.

1.2 | A comparison of the AMBIANCE-Brief and full versions

The full AMBIANCE version has been used in many studies (e.g., Ballen et al., 2010; Guyon-Harris et al., 2020; Yarger et al., 2020) and it includes approximately 150 items divided in five subscales: (1) affective communication errors, (2) role confusion, (3) dissociation/disorientation, (4) negative/intrusive behaviors and (5) withdrawal. Parent-child interactions are filmed during free play or semi-structured activity, and with or without toys. Coding is typically conducted from video recordings by trained coders, allowing the coder to replay and review the interaction as needed. Recently, a shorter version was developed, the AMBIANCE-Brief, which includes only 45 items. This brief version is designed for real-time coding by practitioners. In research settings, coders can be instructed to view video recordings without pausing or rewinding to mirror conditions faced by practitioners. The brief measure was validated by Haltigan et al. (2019) using samples characterized by various socioeconomic and mental health risks, and including children aged 12–54 months and their parents observed in a variety of standard interactive research

paradigms such as the Strange Situation Procedure (SSP), free play, and clean up tasks (i.e., Hobson et al., 2009; Lyons-Ruth et al., 1999; Madigan et al., 2011; NICHD Early Child Care Research Network, 2005). Authors observed strong convergence between the full and brief versions when using continuous overall scores ($r = .89$). Correspondence between disrupted and non-disrupted classifications was also excellent, with 85% of the parents similarly classified in both versions. Cooke et al. (2020), using a sample of adolescent mothers and their infants in two observational situations, further demonstrated strong convergence between the full and brief versions (play with toys $r = .65$; play without toys, $r = .61$). Authors also found that all subscale scores of the full AMBIANCE were significantly correlated with the overall score of the brief version, except for the fearful/disorientation subscale when parents and children were observed during a free play with toys.

Other studies with the AMBIANCE-Brief also found that both the brief and full versions showed similar patterns of correlations with measures of child attachment and parental sensitivity. Precisely, in Haltigan et al.'s (2019) study, mothers of children with a disorganized attachment showed significantly higher scores of disrupted behaviors than those of children with other attachment classifications ($d = .36$ for both versions, Haltigan et al., 2019). In the Cooke et al.'s (2020) study, both the overall scores for the brief and full versions were significantly associated with the continuous score of attachment disorganization (r s between $.32$ and $.52$). Both measures also showed discriminant validity, being significantly more strongly associated with attachment disorganization than with maternal sensitivity (Haltigan et al., 2019). Abdelmaseh (2020) also investigated the associations between the AMBIANCE-Brief and two measures of maternal sensitivity (i.e. Ainsworth's maternal sensitivity scale, Mini-Maternal Behavior Q-Sort-VR) in a sample of families with diverse socioeconomic backgrounds. Results indicated strong negative associations (r of $-.55$ and $-.59$, respectively), such that parents who displayed lower levels of sensitive behaviors engaged in greater levels of disrupted behaviors. Abdelmaseh (2020) suggested that investigating this association among an exclusively high-risk sample may reveal a different pattern of results. In high-risk samples, the severity of relational challenges may contribute to the emergence of more pronounced levels of problematic parental behaviors and accentuate key features of dysfunctional parent-child relationships to emerge more distinctly. However, to date, no study has examined the AMBIANCE-Brief with parents who have been reported for child maltreatment or who are identified as being at elevated risk for maltreatment.

1.3 | Objectives and hypotheses

The first objective of this study was to examine the convergence between the brief and full versions of the AMBIANCE in a sample of parents identified as maltreating or at elevated risk for child maltreatment. We hypothesized that the overall scale score of the AMBIANCE-Brief would be significantly correlated with both the overall score and the subscale scores of the full AMBIANCE. The second objective was to examine whether patterns of results found in previous studies on the associations between either the full (overall score and dimensions) or brief AMBIANCE versions and measures of child attachment and parental sensitivity would be replicated in a sample composed of maltreating parents and parents identified at elevated risk for maltreatment. We hypothesized that parents of children with disorganized attachment would show the highest levels of disrupted behavior on the brief and full AMBIANCE (overall score and dimensions) especially when compared to parents of children with a secure attachment (i.e. Disorganized > Insecure organized, and Disorganized > Secure, as planned contrasts). Conversely, those with secure children would show the lowest levels of disrupted behavior (i.e. Secure < Others, as a planned contrast). We did not formulate a hypothesis on the association between disrupted parental behavior and parental sensitivity due to the mixed findings reported in previous studies.

2 | Method

2.1 | Participants

This study included 71 parents ($M = 27.78$ years, $SD = 7.13$; 93.0% mothers) and their children between 12 and 72 months of age ($M = 39.6$ months, $SD = 16.89$; 60.6% boys). The participating families were recruited through CPS or community agencies providing services to parents identified as being at elevated risk for maltreatment. They were asked to participate in an intervention study (Moss et al., 2011). Only the pretest data were used for the current research. Parents had been reported for child maltreatment and were receiving CPS ($n = 57$) or they were at very high risk for child maltreatment and were receiving community-based services ($n = 14$). Among children with documented maltreatment ($n = 57$), 7.0% were physically abused, 19.3% physically abused and neglected, 3.5% sexually abused, and 70.2% neglected. All families in this study were socioeconomically at risk: (1) 69.0% of the parents had not completed high school; (2) 64.8% reported a family income lower than 20,000\$ CAD per year; (3) 52.1% of the children were from single-parent families; and (4) 28.2% of

the parents were adolescent mothers at the time of delivery. Specific ethnicity data were unavailable; however, the majority of the families were White and lived in urban (medium size cities) or rural areas in the province of Quebec (Canada; see Sauvé et al., 2022). Descriptive statistics are reported in Table 1.

2.2 | Procedure

Parents who were the child's primary caregiver, were initially approached by their case worker. Those interested in participating in the study were referred to our project coordinator, who then explained the study. All parents who agreed to participate with their child signed a consent form. Parents and children took part in two one-hour pretest visits, scheduled approximately two weeks apart. During the first visit, at home, parents completed questionnaires with the help of the research assistant and took part in observational procedures with their child. After this home visit, the research assistant completed the MBQS (Maternal Behaviour Q-Sort) measure. The SSP was conducted during the second visit, in the laboratory. Parent-child interactions during the SSP were videotaped to assess child attachment and disrupted parental behavior. This research was approved by the Ethics committees of the Research institute of the Child Protection Services of Quebec and the Centre Institutionnel d'éthique de la recherche avec des êtres humains (UQAM).

2.3 | Instruments

2.3.1 | Sociodemographic questionnaire

The parent filled out a questionnaire on sociodemographic variables during the home visit. For example, this questionnaire enquired about the child's age, sex, and medical history, and the family's structure.

2.3.2 | Children's CPS files

Under the supervision of CPS, a research assistant consulted children's CPS files to gather information on the child's maltreatment and placement history.

2.3.3 | Parental sensitivity

The Maternal Behaviour Q-Sort (MBQS; Pederson & Moran, 1995) was used to evaluate parental sensitivity following the observation of the parent-child dyad during the entire home visit. This validated tool consists of 90

TABLE 1 Descriptive statistics for the study variables.

Variables	<i>M (SD)</i>	%
Sociodemographic variables		
Child sex (boys)	—	60.6%
Child age (months)	39.06 (16.89)	—
Parent age (years)	27.78 (7.13)	—
Parent education (high school completed)	—	31.0%
Family income (less than 20,000\$)	—	64.8%
Parent and child variables		
Parental sensitivity (MBQS)	.28 (.45)	—
AMBIANCE-Brief (overall score)	4.69 (1.16)	56.3% ¹
Full AMBIANCE (overall score)	3.89 (1.10)	26.8% ¹
Affective communication errors	3.38 (1.33)	
Role/boundary confusion	2.62 (1.20)	
Fearful/disoriented	2.14 (1.07)	
Intrusiveness/negativity	3.35 (1.54)	
Withdrawal	3.21 (1.29)	
Child attachment		
Secure	—	22.5%
Insecure avoidant	—	12.7%
Insecure ambivalent	—	12.7%
Insecure disorganized	—	52.1%

¹Percentage of parents with disrupted communication vs non-disrupted communication.

statement-cards reflecting parents' ability to recognize and respond appropriately and promptly to child's cues. This evaluation is performed in three steps that require sorting statements into nine piles of 10 cards, starting with the first pile containing behaviors that least represent the parent, all the way up to the ninth pile including behaviors that most represent the parent being evaluated. Each statement is associated with a sensitivity criterion score ranging from 1 (low sensitivity) to 9 (high sensitivity). These scores were established by attachment experts according to their representation of a typically sensitive mother. An overall sensitivity score, ranging from −1 (insensitive) to 1 (highly sensitive), is obtained by computing a correlation between the observer sort (pile number) and the expert-generated criterion sensitivity sort. The MBQS has frequently been used with high-risk populations, such as adolescent mothers or parents who have experienced childhood maltreatment (e.g., Bailey et al., 2012; Moran et al., 2008; Tarabulsky et al., 2005). Four coders blind to scores on other study measures were involved in the coding of parental sensitivity. Inter-rater reliability calculated on 20% of the sample cases was excellent $r_{icc} = .84$.

2.3.4 | Child attachment

The classic Strange Situation Procedure (SSP; Ainsworth et al., 1978) was conducted during a lab visit for chil-

dren 12–24 months of age. The preschool version (Cassidy & Marvin, 1992), also validated in several studies (e.g., Moss et al., 2004; NICHD Early Child Care Research Network, 2001), was used for children between the ages of 24 and 72 months. Both procedures are conceptually and technically compatible and have been used in single studies to assess child attachment in samples of children from infancy through preschool periods (Zephyr et al., 2021). Both procedures take place in a room unfamiliar to the child in which developmentally appropriate toys are provided. They each include two separation-reunion episodes between the child and the parent, and a stranger is involved. Differences in the procedures can be explained entirely by child age: in the preschool procedure, the length of each episode is longer, and the stranger is only present for the first separation-reunion episode. Each episode lasts 3 (children aged less than 24 months) or 5 min (children aged more than 24 months). During the separations, if the child experiences significant distress, the parent is immediately invited back into the room. The SSP has been used in multiple studies, with children from different cultural backgrounds and living conditions, including children who are at-risk socioeconomically (Granqvist et al., 2016; Lyons-Ruth et al., 1987) and victims of abuse or neglect (Cicchetti et al., 2006).

Both systems use a four-category coding scheme with specific descriptions of attachment behaviors tailored to

child age. Upon the reunion with the parent: (1) securely attached children (B) seek proximity and contact to the caregiver and are able to return to exploration once soothed by the caregiver, as they can use their caregiver as a secure base from which to explore; (2) children with insecure-avoidant attachment (A) maintain physical and emotional distance from the caregiver, minimize distress and focus on exploration of the environment; (3) children with insecure-ambivalent/dependent attachment (C) exhibit immature behaviors, heightened clinginess towards their caregiver, while also resisting to comforting behavior, which interferes with their ability to explore; and (4) children with insecure-disorganized attachment (D) show contradictory approach behavior, apprehension or odd behavior in the presence of the caregiver. In the preschool coding system, the disorganized category also includes children with insecure-other attachment (IO) who show different attachment strategies from one reunion to the other. Preschool children may also be classified with insecure disorganized controlling attachment (Dcont) if they exhibit behaviors aimed at controlling the caregiver's actions in a caregiving or punitive way. Children identified as D, IO and Dcont are considered disorganized as they all lack a cohesive strategy to seek their caregiver's support for regulating emotions and behaviors (Moss et al., 2004). In the current study, child attachment was rated by four coders, trained by experts (E. Carlson and E. Moss) and coders were unaware of participants' scores on other measures. Coders obtained inter-rater agreement with these experts on separate samples. For the current sample, reliability was calculated on 25% of the sample cases and found to be very good to excellent, $k = .79$ for infancy and $k = .80$ for preschool.

2.3.5 | AMBIANCE (Full version)

The Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Bronfman et al., 2009-2014) is an observational coding system designed to assess disrupted parental behaviors during videotaped parent-child interactions. Disrupted parental behaviors were coded during the SSP, when the parent is present with the child, based on a list of approximately 150 behavioral items that are organized into five 7-point subscales: (1) affective communication errors; (2) role/boundary confusion; (3) fearful/disoriented behaviors; (4) intrusiveness/negativity; and (5) withdrawal. Coders write down the narrative of the video. Based on the viewing of the video and the frequency counts of behaviors, each parent is assigned a severity score on each of the subscales. Ratings on each of these dimensions further yield an overall score ranging from 1 to 7 (1 = sensitive and pos-

itive communication; 3 = some evidence of disrupted communication; 5 = distinct disrupted communication; 7 = highly disrupted communication with no improvement over the course of the interaction). Scores of 4 and below depict non- (or low levels of) disrupted parental behaviors, while scores of 5 and above reflect high levels of disrupted parental behaviors. Two coders, one expert (E. Bronfman) and one coder trained by experts (E. Bronfman and S. Madigan) with whom they achieved excellent inter-rater agreement on a separate sample, coded disrupted behaviors of parents of the current study. Coders also achieved excellent inter-rater reliability on 20% of the current sample for each of the five dimensions (r_{icc} between .82 and .97), for the overall score ($r_{icc} = .91$) and for the disrupted/non-disrupted classification ($k = .84$).

2.3.6 | AMBIANCE-Brief

The Atypical Maternal Behavior Instrument for Assessment and Classification Brief Measure (AMBIANCE-Brief; Madigan et al., 2018) is a shortened version of 45 items from the 5 dimensions of the full AMBIANCE version. In comparison to the full version, the AMBIANCE-Brief only yields one overall score of disrupted parental behavior ranging from 1 to 7. This score indicates the extent to which observed parental behaviors are disruptive to the child. As with the full AMBIANCE, scores of 4 and below are indicative of non- (or low levels of) disrupted parental behaviors, while scores of 5 and above are indicative of high levels of disrupted parental behaviors. The AMBIANCE-Brief was designed for real-time coding by practitioners, who are required to write down the frequency of behaviors while observing the parent-child interaction. Frequency counts and severity of the observed parental behaviors are considered in assigning a score. In the current study, the AMBIANCE-Brief was coded using the same video sequences as those used for the full AMBIANCE measure, specifically, the segments of the SSP during which the parent is present with the child. Coding was conducted by three graduate students, who viewed the video interaction as if coding in real-time, as would practitioners in applied settings. Coders were unaware of participants' scores to other measures. Coders of the AMBIANCE-Brief were not the same as those who coded the Full AMBIANCE measure. The three coders were trained by an expert (S. Madigan) with whom they all achieved excellent inter-rater reliability on a separate sample. Interrater reliability between the three coders on 20% of the sample cases was excellent for both the overall score (ranging from $r_{icc} = .95-.98$) and the non-disrupted versus disrupted classification (ranging from $k = .83-1.00$).

2.4 | Analytic plan

All data analyses were performed using IBM SPSS Statistics software (version 28; 2021), including preliminary analyses conducted to handle missing data and verify assumptions of normality and homogeneity.

For the first objective, a bivariate correlation, with a paired sample *t*-test, was performed to examine the convergence between the overall scores of the full AMBIANCE and brief versions. The correspondence between the disrupted and non-disrupted classifications from the full AMBIANCE and brief versions was assessed using Cohen's Kappa statistic. Correlations were also performed between the subscales of the Full AMBIANCE and the overall score of the brief version.

For the second objective, preliminary correlations were performed to examine whether sociodemographic variables (e.g., child age, sex, parental annual income) were significantly associated with study variables, such as disrupted parental on the AMBIANCE (Full and Brief versions), parental sensitivity, and child attachment. Then, if sociodemographic variables were found significant, they were included as covariates in the main ANCOVA analyses examining whether disrupted parental behaviors (overall score of both AMBIANCE versions) varied as a function of child attachment classifications. A MANCOVA was conducted for the subscales of the full AMBIANCE if sociodemographic variables were found to be significant and therefore included as covariates. If not significant, ANOVA and MANOVA analyses were conducted. analyses included a priori contrasts, as based on study hypotheses. Specifically, three contrasts were examined: (1) Disorganized versus Organized; (2) Secure versus Insecure; and (3) Disorganized versus Secure. Finally, correlations (or partial correlations, if sociodemographic variables were needed) were performed to examine the associations between parental sensitivity and disrupted behavior measured with the full and brief versions.

3 | Results

3.1 | Missing data

Given the skewed distribution of family income, a logarithmic transformation was applied to better meet the assumption of normality. Due to missing data in the sociodemographic questionnaire and the children's CPS files, or due to technical problems during testing, a complete data set of 63 families was available (missing data ranged from 0% to 8%). The missing values were imputed using the Expectation-Maximization likelihood algorithm.

Little's missing completely at random test was not significant, $\chi^2(56) = 66.544$, $p = .156$, indicating no patterns of missingness.

3.2 | Associations between the AMBIANCE-Brief and full versions

A significant moderate correlation was found between the overall scores of the full AMBIANCE and brief versions ($r = .33$, $p = .005$). The paired-sampled *t*-test was also significant, revealing that parents' overall score on the AMBIANCE-Brief ($M = 4.69$, $SD = 1.16$) was higher than on the full AMBIANCE ($M = 3.89$, $SD = 1.10$), $t(70) = -5.15$, $p < .001$. Furthermore, a significant weak correspondence was found between the disrupted and non-disrupted classifications of the full AMBIANCE and brief versions ($k = .23$, $p = .020$). Overall, 59.15% of the cases were similarly classified in both versions, with 78.9% ($z = 2.30$) of the cases similarly classified in both versions as disrupted and 51.92% ($z = -2.30$) as non-disrupted (see Table 2).

Correlations between the overall score of the AMBIANCE-Brief and the different subscales of the full AMBIANCE are presented in Table 3. Significant correlations were found between the AMBIANCE-Brief overall score and the affective communication errors subscale ($r = .24$, $p = .040$), and the withdrawal subscale ($r = .36$, $p = .002$) of the full AMBIANCE version. There were no significant associations between the overall score of the AMBIANCE-Brief and the three other subscales of role/boundary confusion, fearful/disorientation and intrusiveness/negativity of the full AMBIANCE (r s between $-.14$ and $.16$; see Table 3).

An additional *t*-test compared families at high risk of maltreatment to those with confirmed maltreatment on levels of disrupted behaviors, as measured with the full and brief versions of the AMBIANCE. Results with the full AMBIANCE indicated no significant difference between the two groups, $t(69) = -.11$, $p = .910$. A significant difference emerged on the AMBIANCE-Brief, $t(69) = -2.28$, $p = .026$, indicating that parents reported to CPS ($M = 4.84$, $SD = 1.15$) exhibited higher levels of disrupted behaviors than those at high-risk for maltreatment ($M = 4.07$, $SD = 1.00$).

3.3 | Correlates of the AMBIANCE-Brief and full versions

Preliminary analyses revealed significant associations between sociodemographic variables (i.e., child age and sex, parental age, income, and education) and study variables (i.e., AMBIANCE-Brief, Full AMBIANCE, and

TABLE 2 Cross-tabulations of disrupted versus non-disrupted classifications between the full AMBIANCE and brief versions.

AMBIANCE-brief	Full AMBIANCE		Total
	Disrupted	Non-disrupted	
Disrupted	15	25	40
Non-disrupted	4	27	31
Total	19	52	71

Note: $kappa = .23$, $p = .020$.

parental sensitivity, child attachment) measure. Specifically, on the AMBIANCE-Brief, parents exhibited more disrupted behavior with their daughters than with their sons. On the Full AMBIANCE, younger parents showed more disrupted behaviors on the overall scale and higher levels of withdrawal. Younger children also had parents who showed more withdrawal. None of the sociodemographic variables were significantly associated with other Full AMBIANCE subscales, parental sensitivity, and child attachment classification. Based on these findings, significant sociodemographic variables were included as covariates only in the analyses of the outcomes with which they were significantly correlated. Correlation coefficients are presented in Table 3.

3.4 | Associations with child attachment

Results of the ANCOVAs, presented in Table 4, revealed significant differences in the levels of disrupted parental behaviors measured with the AMBIANCE-Brief overall score as a function of child attachment classifications, $F(3, 66) = 3.07$, $p = .034$. Results of planned a priori contrasts revealed that (1) parents of children with a disorganized attachment exhibited marginally higher levels of disrupted behaviors compared to parents of children with an organized attachment ($t = 1.69$, $p = .095$); (2) parents of children with a secure children exhibited significantly less disrupted behaviors than parents of children with an insecure attachment ($t = -2.46$, $p = .016$); and (3) parents of children with a disorganized attachment exhibited more disrupted behaviors than parents of children with a secure attachment ($t = 2.89$, $p = .005$).

The ANCOVA for the association between disrupted parental behaviors measured with the full AMBIANCE overall score and child attachment was not significant, $F(3, 66) = .182$, $p = .908$. No planned contrasts were significant (ts between $-.72$ and $.60$).

A MANCOVA was conducted to examine the effect of child attachment on the five dimensions of disrupted behaviors, with parent age and child age included as covariates. The multivariate test using Wilks' Lambda indicated a significant effect, $\Lambda = .663$, $F(15, 168.80) = 1.81$, $p = .037$. ANCOVAs on the association between the full AMBIANCE subscales of disrupted parental behaviors and

child attachment were not significant (F s between 1.00 and 2.29), except for the withdrawal dimension, $F(3, 65) = 2.94$, $p = .039$. Given that 15 contrasts were conducted within this MANCOVA (3 per AMBIANCE dimension), p levels of these contrasts were corrected using the Benjamini-Hochberg procedure to control the false discovery rate ($FDR = .05$). The corresponding critical threshold was $p \leq .0033$ (rank 1 of 15). No contrasts remained significant after correction. For exploratory purposes, we tentatively and only report the three uncorrected contrast results for the withdrawn dimension, as the MANCOVA and the omnibus test for this specific dimension only were significant. Results of planned contrasts revealed that (1) parents of children with a disorganized attachment did not significantly differ in terms of withdrawal behaviors from parents of children with an organized attachment ($t = .65$, $p = .520$); (2) parents of children with a secure children exhibited significantly less withdrawal behaviors than parents of children with an insecure attachment ($t = -2.46$, $p = .017$); and (3) parents of children with a disorganized attachment exhibited more withdrawal behaviors than parents of children with a secure attachment ($t = 2.25$, $p = .028$). No other planned contrasts were significant (ts between $-.36$ and 1.31).

3.5 | Associations with parental sensitivity

The partial correlations between the parental sensitivity score and the overall scores of the AMBIANCE-Brief ($r = .04$, $p = .732$; controlling for child sex) and full versions ($r = .09$, $p = .446$; controlling for parent age) were similarly weak and nonsignificant. Likewise, there were no significant associations between the parental sensitivity score and the subscales of the Full AMBIANCE version (rs between $-.06$ and $.18$; controlling for parent and child age for the withdrawal subscale only).

4 | Discussion

The current study is the first to examine disrupted parental behaviors with the AMBIANCE-Brief in a sample of young children and their parents reported for child

TABLE 3 Correlations between the parental sensitivity, AMBIANCE-Brief and Full versions.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. AMBIANCE-Brief (overall score)													
2. Full AMBIANCE (overall score)	.33**												
3. Affective communication errors	.24*	.69***											
4. Role/boundary confusion	-.14	.14	.21										
5. Fearful/disoriented	.16	.38**	.20	-.01									
6. Intrusiveness/negativity	.06	.46***	.37**	.37**	.18								
7. Withdrawal	.36**	.50***	.33**	-.31**	.07	-.20							
8. Parental sensitivity	.10	.09	.15	.18	-.09	.10	-.02						
9. Child attachment	.16	.02	.21	.16	-.06	.19	.02	-.18					
10. Child sex	-.25*	.02	.04	.01	.03	.21	-.12	-.23	.03				
11. Child age	-.21	-.22	-.10	.03	-.16	.07	-.27*	-.18	-.03	-.03			
12. Parent age	-.12	-.33**	-.16	.04	.02	-.01	-.27*	-.01	.05	-.09	.41***		
13. Parent income	-.20	.11	.29	-.01	.17	.07	-.09	-.05	.22	.03	.20	.11	
14. Parent education	-.17	-.20	-.13	-.16	-.20	-.10	-.08	-.03	.18	.16	.25*	.41***	.35**

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

TABLE 4 AMBIANCE scores as a function of child attachment classifications.

	Child attachment classifications				
	Secure	Insecure			
Parental disrupted behavior	B	A	C	D	Significant contrasts
	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)	
	<i>n</i> = 16	<i>n</i> = 9	<i>n</i> = 9	<i>n</i> = 37	
AMBIANCE-brief (overall score)	4.00 (0.90)	5.00 (1.12)	4.56 (1.33)	4.94 (1.14)	D > O [†] B < I [*] D > B [*]
Full AMBIANCE (overall score)	3.63 (0.89)	4.11 (1.05)	4.00 (1.22)	3.92 (1.19)	—
Affective communication errors	3.19 (1.28)	2.67 (1.50)	3.78 (1.39)	3.54 (1.28)	—
Role/boundary confusion	2.69 (1.14)	1.78 (0.83)	3.22 (0.97)	2.64 (1.27)	—
Fearful/disoriented	1.94 (0.93)	2.67 (1.22)	1.89 (0.93)	2.16 (1.12)	—
Intrusiveness/negativity	3.50 (1.26)	2.33 (1.41)	3.33 (1.41)	3.54 (1.66)	—
Withdrawal	2.44 (1.21)	4.11 (1.45)	3.00 (1.58)	3.38 (1.04)	B < I [*] D > B [*]

Note: * $p < .05$

[†] $p < .10$.

Abbreviations: B, Secure; A, Avoidant; C, Ambivalent; D, Disorganized; O, Organized; I, Insecure.

maltreatment or identified at elevated risk for maltreatment, and to investigate its convergence with the full version within this population. Furthermore, this study examined whether disrupted parental behaviors measured with both versions were associated with child attachment and parental sensitivity. Assessments of disrupted parental behaviors with both the brief and full versions of the AMBIANCE were conducted using video recordings. While coders of the full measure were able to replay video recordings during coding, those of the brief version performed coding as if in real-time (only viewing the video recordings once, and without pausing or rewinding them).

4.1 | Convergence between the brief and full versions of the AMBIANCE

Results on the convergence between the AMBIANCE-Brief and full versions revealed that the overall score of the AMBIANCE-Brief was moderately correlated with that of the full version. Despite the significant correlation, a difference in mean levels of disrupted parental behavior was found between the two versions, with parents receiving higher scores on the AMBIANCE-Brief compared to the full version. Moreover, the results indicated a significant but weak overall correspondence of 59.15% between parents identified as disrupted/non-disrupted using the AMBIANCE-Brief and those classified using the full version. These findings support the convergent validity of the AMBIANCE-Brief with the Full AMBIANCE version, and they are consistent with two previous studies involv-

ing populations with various social and mental health risks, which also reported convergence between the two AMBIANCE versions (Cooke et al., 2020; Haltigan et al., 2019). However, in these two studies, convergence was strong. The weaker convergence in our study may be partly explained by the fact that the AMBIANCE-Brief identified a greater number of parents displaying high levels of disrupted behaviors compared to the full version. Real-time coding requires coders to make rapid decisions about observed parental behaviors, without the opportunity to pause or review ambiguous interactions. This may lead to a higher frequency of disrupted behaviors being recorded. Another possible explanation is that the full AMBIANCE includes a wider array of often subtler behaviors. Coders using the Full version may have recorded behaviors that are not included in the brief version, and given the elevated risk level of our sample, these subtler behaviors may have been more readily observed and coded, thereby reducing convergence between the two measures. The broader range of items on the full AMBIANCE measure may also dilute the perceived significance of observed disrupted behaviors. For instance, assessing the overall degree of disruption based on a few moderately intensive disrupted behaviors drawn from a pool of 150 possible items may carry less interpretive weight than identifying the same few behaviors of similar intensity from a smaller pool of 45 items. As a result, coders using the full AMBIANCE may perceive parents as exhibiting lower levels of disruption compared to those using the AMBIANCE-Brief, which may highlight behaviors that more distinctly reflect the parents disrupted communication. This may also explain why the AMBIANCE-Brief, but not the full AMBIANCE,

distinguished parents at-risk for maltreatment from those with documented reports of child maltreatment.

Results of this study also showed that the overall score of the AMBIANCE-Brief was significantly associated with two subscales of the full measure (affective communication errors and withdrawal), whereas no significant correlations were found with the other three subscales (role/boundary confusion, fearful/disorientation, and intrusiveness/negativity). These findings are partially consistent with those reported by Cooke et al. (2020) with a sample of adolescent mothers and their infants. In their study, all dimensions of the full AMBIANCE, except the fearful/disoriented subscale, were significantly associated with the AMBIANCE-Brief overall score during a play session with toys. Cooke et al. (2020) suggested that behaviors within the fearful/disorientation dimension may be more difficult to detect in real-time. This may also apply for role/boundary confusion and intrusiveness/negativity in our sample, primarily composed of parents reported for neglect. It is possible that parental withdrawal (e.g., backing away from the child and redirecting the child away) and affective communication errors (e.g. failure to respond to child distress, approaching the child then moving away) were more likely to emerge in neglectful parents during a stressful context such as the SSP, and were therefore more easily identifiable in real-time coding. Interestingly, two studies showed that having experienced multiple forms of childhood maltreatment was associated with mothers' higher levels of withdrawal (Khoury et al., 2020) and affective communication errors (Guyon-Harris et al., 2020) when interacting with their infants. Thus, mothers' history of childhood maltreatment might have played a role in the disrupted behaviors observed in the present sample, as we found, in a prior study, that several parents in this sample were victims of multiple types of childhood maltreatment, with 85% of them reporting childhood maltreatment (Sauvé et al., 2022).

4.2 | Associations with child attachment and parental sensitivity

Results from the AMBIANCE-Brief showed that parents of securely attached children demonstrated significantly lower levels of disrupted behaviors compared to parents of insecure children. Parents of children with disorganized attachment showed marginally higher levels of disrupted behaviors compared to those of children with organized attachment. As expected, parents of children with disorganized attachment exhibited higher levels of disrupted parental behaviors than those of secure children. These findings are consistent with previous research showing associations between disorganized attachment

and parental disrupted behaviors (Cooke et al., 2020; Haltigan et al., 2019; Madigan et al., 2006 for a meta-analysis). Notably, even within a sample of parents reported for maltreatment or identified at high risk for maltreatment, parents exhibiting the lowest levels of disrupted behavior may develop a secure attachment relationship with their child. This finding suggests that efforts to reduce disrupted parental behavior could play a protective role against child attachment insecurity within a high-risk sample. Thus, these results support the convergent validity of the AMBIANCE-Brief and underscore its potential practical utility in assessing disrupted behaviors among parents involved with CPS or considered at elevated risk for child maltreatment.

Surprisingly, results using the full AMBIANCE measure (overall score and subscales) revealed no significant associations with child attachment. This lack of results with the Full AMBIANCE measure is contrary to expectations. Previous studies have consistently reported associations between these dimensions and child attachment disorganization (Madigan et al., 2006; Yarger et al., 2020). For exploratory purposes, we further examined results of the withdrawn dimension, given that the MANCOVA and omnibus tests for this specific dimension were significant. Framed as preliminary, these results tentatively show that withdrawal could have the potential to distinguish parents of children with insecure organized or disorganized attachment from those of children with secure attachment, suggesting that parental withdrawal may play a distinctive role in shaping child attachment outcomes in maltreated children or at elevated risk for maltreatment. Withdrawal behaviors may be particularly salient among neglecting parents, as was the case in the present sample, which primarily included parents reported to CPS for neglect. In a sample of families involved with CPS, Yarger et al. (2020) found that parental withdrawal behavior was the only dimension of disrupted behaviors associated with child attachment disorganization. This result supported a meta-analysis by Wilson et al. (2008) who identified a strong association between neglect and low parental involvement. It is possible that, to differentiate among parents who are all considered very high-risk, certain types of disrupted behaviors may be more indicative of underlying problematic parent-child communication. The reduced statistical power of the current study may have accounted for the absence of significant findings after controlling for false discovery rate. Future studies with larger samples are needed to more fully investigate the associations between child attachment and AMBIANCE dimensions in maltreated and high-risk children.

No significant correlations were found between parental sensitivity and either the brief or the full versions of the AMBIANCE, suggesting that these two constructs

may capture distinct dimensions of caregiving behavior. These findings diverge from those reported by Abdelmaseh (2020), who found strong negative associations between the AMBIANCE-Brief and parental sensitivity in a socioeconomically diverse sample. Similarly, they contrast with results of a study using the full AMBIANCE with adolescent mothers (Moran et al., 2008). Our results are, however in line with two other studies that used the FR measure (True et al., 2001) or a combination of the FR and AMBIANCE measures (Ensink et al., 2016). Several factors may account for these divergent patterns of results across studies. Variations in sample characteristics, including the level and type of risk exposure, and in contexts of observation may influence the expression and detectability of disrupted behaviors and sensitivity. The observational setting, whether at home or in a laboratory, the length of observation, the degree of stress induced during the interaction task, and the age range of children may all contribute to inconsistencies in findings. At the moment, there are too few studies with mixed results to provide a clear picture on whether these constructs are distinct. More research is needed. In low-risk samples, a significant association between parental sensitivity and disrupted behavior may be more likely to emerge, as parents in these contexts are less likely to have experienced trauma that may trigger such behaviors. In contrast, in high-risk samples where parental trauma is more prevalent, the likelihood of recruiting parents who can be sensitive and have a history of trauma increases. This may help explain the lack of significant associations between parental sensitivity and disrupted behavior observed in the present study.

4.3 | Strengths and limitations

This study has several strengths and limitations. A notable strength lies in its exclusive reliance on observational data. Additionally, coders achieved excellent inter-rater reliability on these observational measures, contributing to the robustness of the findings. Nevertheless, the study's small sample size may have reduced statistical power. Another limitation concerns sample heterogeneity, as some families were confirmed cases of child maltreatment, while others were only at high risk. The cross-sectional design of the current study refrains the possibility to draw causal inferences on the association between parental behavior and child attachment. Moreover, disrupted behaviors were assessed in a stress-inducing context, the SSP that took place in a research laboratory. While this setting is well-suited for eliciting behaviors related to emotion regulation, it may not fully capture how disrupted behaviors unfold in naturalistic settings specific to high-risk families, which often involve household chaos (Marsh

et al., 2020). Observing and scoring disrupted behaviors in a more naturalistic setting, such as a home visit, may have yielded different results. Future longitudinal research with larger, more homogeneous maltreatment samples, and observations conducted across both laboratory and naturalistic contexts is needed to replicate and extend the current findings, and clarify the developmental implications of disrupted parental behaviors. Additionally, future research should also explore associations between parental disrupted behavior measured with the AMBIANCE-Brief and parental risk factors, such as adult (unresolved and hostile-helpless) attachment state of mind, childhood maltreatment, and psychological distress to better identify potential precursors.

4.4 | Implications for research and clinical practice

Our findings have important implications for research. Attachment-based tools such as the AMBIANCE-Brief can offer valuable insights into the relational disturbances that underlie attachment insecurity and disorganization. Nevertheless, as with other attachment measures, they are not designed to function as stand-alone tools. Hence, embedding the AMBIANCE-Brief within a broader, holistic assessment or intervention framework that considers a wider picture of family difficulties and strengths may facilitate its appropriate use. For example, in a prior study on parenting capacity assessments in cases of child maltreatment (Cyr et al., 2020), we cautioned against relying solely on observed improvements in caregiving behavior to guide intervention planning or placement decisions. We advocated for a comprehensive approach that evaluates a range of risk and protective factors across individual, familial, and environmental systems. Such an approach enables practitioners to understand the complex interplay of factors, including parental disrupted behaviors, that may compromise caregiving capacity and child developmental outcomes.

More specifically, the AMBIANCE tool can help practitioners recognize, through the manifestation of disrupted parental behavior, the potential impact of parents' own childhood trauma on the parent-child relationship, thereby providing clearer guidance for trauma sensitive and attachment-informed intervention planning. Taken together, identifying key disrupted behaviors that are meaningfully associated with parent-child attachment relationships, alongside parental strengths linked to sensitive caregiving, could be used as leverage to promote attachment security. Prior research has shown that practitioners can achieve high inter-rater reliability in the AMBIANCE-Brief when trained by an expert

AMBIANCE-Brief (Madigan et al., 2021). Additionally, in a study assessing feasibility and acceptability, most practitioners perceived the AMBIANCE-Brief as relevant and useful for their clinical work (Eirich et al., 2024). However, only two-thirds of these practitioners reported that the tool was easy to integrate into treatment planning, highlighting the need for further support to facilitate its implementation.

5 | Conclusion

This study examined whether the AMBIANCE-Brief correlated with the full version of this measure, child attachment, and parental sensitivity in families involved with child protection or community services due to maltreatment or elevated risk for maltreatment. Results showed moderate convergence between the brief and full versions of the AMBIANCE measures. However, parents received higher scores on the AMBIANCE-Brief than on the full AMBIANCE on average, the correspondence between the disrupted/non-disrupted classifications between the two measures was weak, and the AMBIANCE-Brief was significantly related to only two subscales of the full version, the affective communication errors and the withdrawal subscales. In addition, parental disrupted behaviors measured with the AMBIANCE-Brief were associated with child attachment, distinguishing securely and disorganized attached children. In contrast, the full AMBIANCE was not significantly related to child attachment, and neither the brief nor the full measure of parental disrupted behaviors correlated with parental sensitivity, suggesting these two constructs may be distinct. These findings support the clinical utility of the AMBIANCE-Brief for identifying disrupted behaviors linked to attachment insecurity in high-risk families and maltreating parents. Practitioners may benefit from integrating the AMBIANCE-Brief into clinical work to inform intervention planning. Further research is warranted to replicate and expand upon these findings within populations of maltreating parents and high-risk families separately.

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