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Improving parent–child interactions in maltreating families with the Attachment Video-feedback Intervention: Parental childhood trauma as a moderator of treatment effects

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ABSTRACT

Research is demonstrating the effectiveness of attachment-based interventions for maltreating families. However, parents' own traumatic childhood experiences may interfere with treatment effects. The current study investigated in a sample of maltreating families whether effects of the Attachment Video-feedback Intervention (AVI) on parent–child interactive quality were moderated by parental childhood trauma. Families were randomized to receive AVI (n = 29) or a Psychoeducative intervention (PI; n = 19), or they were in anon-randomized comparison group (RS; n = 40). Parents filled out the Childhood Trauma Questionnaire and videotapes of parent–child interactions were coded for interactive quality. Parents who received AVI showed improved parent–child interactive quality compared to parents in PI and RS groups. However, parents with more severe levels of childhood trauma showed less improvements. Future research should explore whether clinical attention with a specific focus on trauma would increase treatement effects.

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Child maltreatment; attachment intervention; parental trauma; RCT; video feedback; AVI

Child maltreatment is a highly prevalent global problem with long-term detrimental consequences for victims (Gilbert et al., 2009). Efforts to prevent or reduce child maltreatment are most likely to succeed through effective interventions that are tailored to families' individual needs. Even though there is an emerging body of evidence demonstrating the effectiveness of attachment-based interventions for maltreating families (e.g. Bernard et al., 2012; Cicchetti et al., 2006; E. Moss et al., 2011; Steele et al., 2019), much remains unknown regarding possible mechanisms or moderators of these intervention effects. Identifying which families are most or least likely to benefit from these interventions would be most informative to clinical practice and future research. One important moderating factor may be parents' own experiences of maltreatment in their childhood (Moran et al., 2005; Pasalich et al., 2019; Steele et al., 2019). The current randomized controlled trial (RCT) investigated in a maltreating sample whether the effects of the short-term, Attachment Video-feedback Intervention (AVI) on parenting were moderated by parental childhood trauma.

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Attachment in maltreating families

The parent–child relationship can provide an important buffer for children in times of stress, through which they learn to regulate their emotions and behaviours. Through a sensitive parent, who is able to respond to child signals in an adequate and prompt manner (Ainsworth et al., 1978), children are able to develop a secure attachment (De Wolff & Van IJzendoorn, 1997), which is an important indicator of their future development (Fearon et al., 2010; Groh et al., 2014, 2017, 2012; Sroufe et al., 2005). However, maltreating families are often characterized by enduring dysfunctional parent–child interactions in which the parent shows unpredictable, hostile, rejecting, and/or unresponsive behaviour towards the child (e.g., Cicchetti & Valentino, 2006; Crittenden & Ainsworth, 1989; Lyons-Ruth et al., 1987). Consequently, children in these families are confused: On the one hand they need their parent to provide security for the distress they experience, but on the other hand their parent is the source of their distress. It is therefore not surprising that a high proportion of maltreated children develop a disorganized or insecure attachment to their parents (Cyr et al., 2010; Van IJzendoorn et al., 1999), which can lead to a wide range of negative developmental outcomes later in their lives (Carlson, 1998; Fearon et al., 2010). In order to change these pervasive, dysfunctional interactive patterns in maltreating families, one area of intervention research has focused on testing the effects of attachment-based interventions aimed at improving parental sensitivity.

Attachment-based interventions for maltreating families

Meta-analytic evidence has shown that interventions with a focus on parenting behaviour are among the most effective interventions for maltreating families (Euser et al., 2015; Van der Put et al., 2018). In line with this evidence and the hypothesized relevance of attachment-theory in this context (e.g., Tarabulsy et al., 2008), several randomized control trial (RCT) studies have demonstrated positive effects of attachment-based parenting interventions in maltreating samples. A recent meta-analysis showed that effect sizes of attachment-based interventions in increasing rates of organized attachment were larger in maltreated children than in non-maltreated children (Facompré et al., 2018). Some studies in this area evaluated the effectiveness of moderate- to long-term interventions, including the Child- or Infant-Parent Psychotherapy (approximately 1 year; Cicchetti et al., 2006; Lieberman et al., 2005; Toth et al., 2002) and the Group Attachment-Based Intervention (GABI – 26 weeks; Steele et al., 2019). However, because time and money resources can be limited in child protection settings, short-term interventions often appear more attractive.

Three recent RCT studies investigated the effects of short-term, attachment-based interventions for maltreating families or at risk for maltreatment (Bernard et al., 2012; Moss et al., 2011; Negrao et al., 2014). Among these interventions are the Attachment and Biobehavioral Catch-up (ABC) intervention (Bernard et al., 2012), the Attachment Video-feedback Intervention (AVI; Moss et al., 2011), and the Video-feedback Intervention to promote Positive Parenting (VIPP; Juffer et al., 2017). Common elements of these interventions are that they have a structured protocol, they are conducted within a few months (with about 6 to 10 sessions), include home visits, use video feedback, focus on parents' strengths, and are based on attachment theory. These attachment-based

intervention studies have shown to be effective in improving child attachment (i.e., fewer children with a disorganized attachment and more children with a secure attachment post-intervention), child mental and motor development (Dubois-Comtois et al., 2017) and parent–child interactive quality, and in reducing emotional and behavioural problems (Bernard et al., 2012; Moss et al., 2011; Negrao et al., 2014).

Parental trauma as intervention moderator

Even though a growing number of RCTs are demonstrating the effectiveness of short-term, attachment-based interventions for maltreating families, there is still little knowledge regarding which families are more or less likely to benefit from these interventions. Many maltreating parents are faced with difficulties of various kind and severity levels, which may impede treating efficacy. For instance, they are more likely than non-maltreating parents to suffer from psychopathology, to experience low levels of social support and high levels of stress, and to have experienced childhood adversities themselves (Stith et al., 2009). It could be speculated that for parents who suffer to a greater extent from these difficulties, it can be more challenging to benefit from (parenting) interventions. More knowledge on which of these factors may increase or decrease intervention effects would be highly relevant to inform clinical practice, especially considering that even interventions with moderate to high effect sizes do not have beneficial effects for *all* parents. By obtaining more knowledge on moderating factors and mechanisms for intervention effects, interventions could be better matched to specific families who are most likely to benefit. This way, ultimately more families can be successfully helped through these interventions.

In the context of interventions for maltreating families, one potential moderating factor may be parents' own history of child maltreatment. The intergenerational transmission of child maltreatment, which has been established in several meta-analyses (Assink et al., 2018; Madigan et al., 2019), implicates that maltreating parents are at increased risk to have experienced maltreatment in their own childhood. Several studies have demonstrated that these traumatic experiences can interfere with one's ability to benefit from an intervention. For instance, a meta-analysis showed that depressed patients with a history of child maltreatment had benefitted less from depression treatment than depressed patients without such a history (Nanni et al., 2012). In the context of parenting interventions, Moran et al. (2005) found in their RCT that a short-term attachment-based intervention (eight sessions) was not effective in improving child attachment security or maternal sensitivity for adolescent mothers who had unresolved attachment representations or who had experienced physical or sexual abuse in their childhood. In a more recent study, Steele et al. (2019) found that the effects of GABI on several parenting behaviours of mothers at very high risk for maltreatment were moderated by their exposure to adverse childhood experiences: The intervention was less effective for mothers who had high levels of adverse childhood experiences. Even though the sizes of these interaction effects were small and not found for all outcome variables, these findings suggest that parents who have experienced child maltreatment in their childhood represent a specific group for whom it is more difficult to intervene successfully. However, another recent study regarding the effects of an attachment-based intervention including a sample of parents involved with child welfare services reported the opposite effect. In this study, only

parents with a history of physical childhood abuse showed significant improvements in parental sensitivity following the intervention (Pasalich et al., 2019). These contradictory findings call for more research in order to derive more conclusive evidence regarding the moderating effect of parental childhood trauma. In addition, this has yet to be tested in a sample of child protection cases for which maltreatment was substantiated by Child Protection Services (CPS) for all of the children included in the sample.

Present study

The goal of the present study was to investigate whether the effects of the AVI with maltreating parents were moderated by parental childhood trauma. We investigated this with an RCT in a Canadian sample of families with substantiated child maltreatment who were referred to a CPS agency for an assessment of their parenting capacities. A prior report on this sample (Cyr et al., 2020 in revision) replicated results of the first AVI study by Moss et al. (2011) with maltreating families. Moss et al. (2011) had found that parents who received AVI showed increased parental sensitivity post-intervention compared to parents who received regular child welfare services. In our prior report, we showed increased quality of parent–child interaction for parents exposed to a parenting capacity assessment protocol including the AVI, in comparison to parents receiving assessment services with psychoeducational intervention activities or receiving assessment services with no-intervention. In the current study, similar to Moran et al. (2005) and Steele et al. (2019), we expected to find that parents with high levels of childhood trauma would benefit less from the AVI intervention.

Methods

Sample

The final sample of this study included 88 children aged between 0 and 5 years (M_{age} = 16.90 months, SD_{age} = 20.70; 59% boys), and their primary biological caregiver (M_{age} = 27.57 years, SD_{age} = 6.67; 86% mothers). For all families, child maltreatment had been substantiated and legally documented in CPS records. Recruitment of families took place (1) in a CPS clinic in the city of Montreal, where families were referred to for a parenting capacity assessment (PCA) and (2) through CPS case workers from the same metropolitan area who requested PCAs from CPS evaluators not part of the clinic. Families were approached for participation if they were soon to be starting a PCA trajectory and if they had a child aged between 0 and 5 years. Children with severe medical or developmental problems, such as autism spectrum disorder, were excluded from participation. Some families participated with more than one child; however, for each family one child was appointed as the target child for this research. To avoid dependency of children within families, we included only the target children in the current study. Families recruited at the clinic were randomized to either an assessment PCA protocol with the embedded Attachment Video-feedback Intervention (AVI) as the intervention component (target group) or to an assessment protocol including Psychoeducational Intervention (PI) activities. Families were assigned to the next available practitioner following a simple

randomization procedure with a 1:1 allocation sequence. Other families who agreed to participate and were not referred to the PCA clinic, but received PCA services with no intervention component, were part of the Regular Services group (RS). These families could not be randomized but were included in the research project as a comparison group.

If families who met the selection criteria were referred for a PCA, they were approached for the research by a CPS evaluator. If parents were interested in the project, the research coordinator made an appointment (telephone or face-to-face) with the parent(s) to explain the research protocol. Although a PCA is mandatory by law in cases of child maltreatment, parents were free to decide if they wanted to participate in the study. Parents who agreed to participate with their child signed informed consent. In total, 218 eligible families were approached, of which 95 (44%) did not participate, either because they refused participation (n = 93) or they were withdrawn by researchers because the child was hospitalized at intake (n = 2). A total of 123 parent–child dyads started the pre-test and 88 completed the post-test laboratory and home visits (29 in AVI group, 19 in PI group, and 40 in RS group). See Figure 1 for an overview of attrition and participation throughout the project.

Inspection of demographic variables confirmed that the study population was an extremely high-risk group, with 86% of the parents being unemployed or living on social welfare, 76% of the parents not having a high school diploma, and 30% of the parents being from an ethnic minority group. CPS legal case records were used to classify maltreatment. Classification of child maltreatment by CPS corresponded to widely accepted definitions (Cicchetti & Valentino, 2006): sexual abuse (sexual or attempted sexual contact between a caregiver and a child), physical abuse (injuries non-accidently inflicted by an adult on a child), neglect (failure to provide minimal physical care), and emotional abuse (failure to provide for psychological safety and security or basic emotional needs). A majority of the children had experienced neglect (78%), 32% had experienced emotional abuse, 27% had experienced physical abuse, and 13% had experienced sexual abuse. Fourteen children were living in foster care when the intake took place; for these children the PCA concerned the question of whether the child could be reunified with its biological parent(s). Children in foster care had either been living in a foster family for a while or were only placed there for the time of the PCA assessment. For these children, the PCA (assessment with or without intervention) and research appointments took place in a home-like room (kitchenette, sofa, and a small table with toys) at the CPS agency. The presence of the child at the biological parents' house was generally not legally allowed.

Procedure

Pre- and post-tests

The pre- and post-test both consisted of a 1-h lab visit and a 1-h home visit, which were planned within 1 week from each other. In case the child was living with foster parents at pre-test, the biological parent was asked to participate. During the visits, the parent was asked to fill out questionnaires and observations of parent–child interactions were conducted. The PCA started within 1 week after pre-test for each family. The post-test was

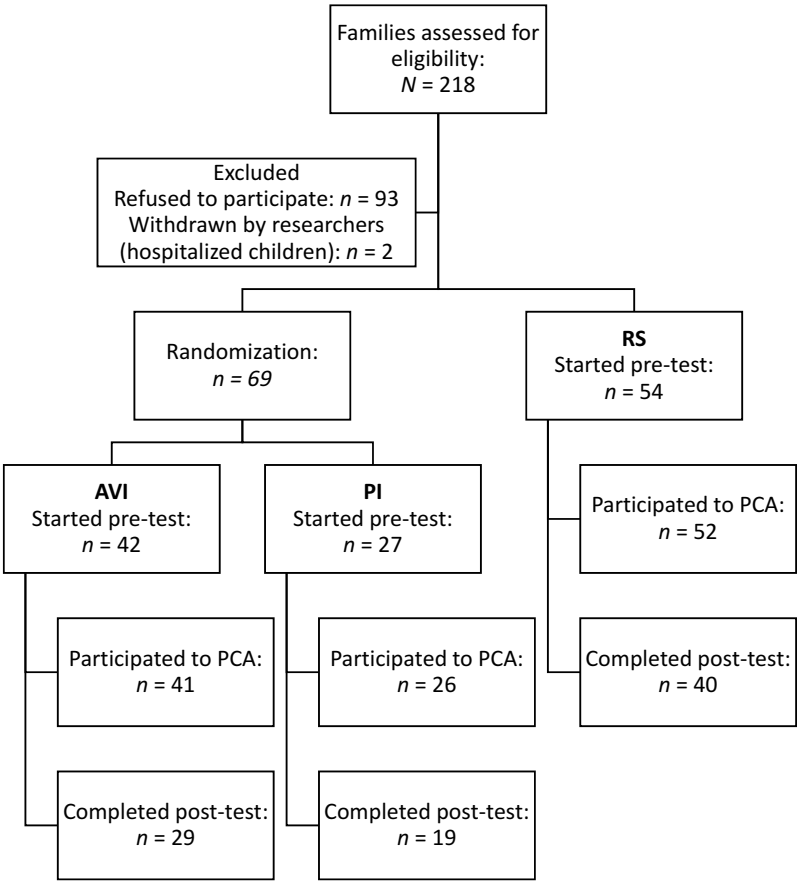

Figure 1. Flow Chart of Sample Throughout the Study (AVI: Attachment Video-feedback Intervention; PI: Psychoeducational Intervention; RS: Regular PCA services; PCA: Parenting Capacity Assessment).

similar to pre-test and took place 2 weeks after the PCA was completed. The ethics committee of the Montreal's CPS Agency approved the research protocol.

Parenting capacity assessment groups

PCAs in cases of child maltreatment are generally conducted by CPS agencies to orient placement decisions, as to know whether the child should be removed from or remain/return with the parent, and to further plan the intervention with the families. Multiple risk factors of the family ecology (e.g., cultural values, financial strains, psychological resources, and social support) may impinge on parenting capacities and increase the potential for abuse and neglect. PCA protocols, therefore, evaluate parents' strengths and limitations, as influenced by the risk and protective factors of their ecology, in relation to the capacity to care for the child. One limitation of PCAs is that they generally do not assess parental capacity to change. Some researchers have argued for the need to assess parents' responses to a short intervention, while they are undergoing a PCA, as a means to assess their potential for enhanced parenting (Cyr & Alink, 2017; Harnett et al., 2018; Van

IJzendoorn et al., 2018). In our study, there were three different PCA protocols, one regular protocol (RS) with no intervention component and two other protocols (AVI and PI) with an embedded intervention component (for more information on the value of these protocols in terms of placement decisions see Cyr et al., 2020 in revision). CPS practitioners of all three groups were introduced to parents as evaluators mandated to assess parenting capacities. Evaluators were asked for a written report of their assessment by the social worker who requested the PCA. PCA reports were used by social workers to help with court decisions.

Comparison group: RS

The RS group was a non-randomized comparison group consisting of families for whom the PCA was conducted by a CPS evaluator not part of the PCA clinic. The CPS evaluators for these families relied on the Assessing Parenting Capacity Manual (De Rancourt et al., 2006) to conduct PCAs, which is an adapted French version of the Steinhauer guidelines (Steinhauer et al., 1995). The guidelines describe how an assessment of risk factors for child maltreatment and parents' ability to recognize their own difficulties can be made through discussions with the parent and observations of the parent–child relationship. This guideline helps to obtain information regarding the social and family contexts, the child physical and emotional development, the parental impulse control, parenting behaviour, and history of prior professional support. In this version of the PCA, there was no intervention component to assess the parent's potential for enhanced parenting. All CPS evaluators had a college degree in psychoeducation. The PCA for parents in the RS group took place in approximately four to five sessions ($M = 4.55$; $SD = 2.05$), conducted within approximately 2 months ($M = 1.93$; $SD = 2.17$). Parents in the RS group received significantly fewer sessions than parents in the AVI ($t = -8.49$, $p < .001$) and PI ($t = -5.01$, $p < .001$) groups.

Randomized groups

AVI and PI. Families who were referred to the PCA clinic were randomized to receive a standardized PCA protocol with an embedded intervention component consisting of either the AVI or a psycho-educational intervention (PI) as a means to assess for the parent's potential of enhanced parenting. For both intervention groups, the PCAs were conducted within approximately 2 months (AVI: $M = 2.13$; $SD = 0.63$; PI: $M = 1.73$; $SD = 0.73$) and consisted of a maximum of 12 3-h sessions (AVI: $M = 10.39$; $SD = 2.91$; PI: $M = 8.39$; $SD = 3.42$). For AVI families, about 6.83 ($SD = 2.33$) of the received sessions were video-feedback sessions. For both the AVI and PI groups, each session consisted of: (1) a discussion with the parent according to the previously mentioned Steinhauer guidelines (Steinhauer et al., 1995), (2) observations of parent–child interactions during daily activities and routines such as feeding, and (3) intervention activities. The intervention, either the AVI or PI, started from the second session (the first session was only used to gather information on the family). The interventions, although equally intensive, differed with respect to their theoretical framework.

Attachment video-feedback intervention (AVI). The AVI (Moss et al., 2011) is a short-term intervention for maltreating parents and their children between 0 and 5 years old. During the AVI, parents' positive behaviours are highlighted by making them aware of

their strengths and the positive impact of their behaviour on their child. These reinforcements are provided to the parent through the video-feedback of a 10-min tape of parent–child interactions (as well as throughout the sessions when relevant). During feedback, the video is paused at positive moments to reinforce parental sensitivity and reciprocity in parent–child interactions and capacity for reparation. The parents are actively invited to share observations and thoughts about their own and child's behaviour. In addition to enhancing sensitive parenting behaviour, the AVI aims to reduce frightened, frightening, and inappropriate behaviours of the parent. The PCA evaluators for this study were trained by attachment experts and all had a college degree in psychoeducation and more than 5 years of experience in conducting PCAs with CPS. Supervision meetings with an attachment expert also trained as a child psychologist (the second author) were regularly organized (once every 2 weeks and later once every month) to ensure treatment integrity. Group supervision involved AVI evaluators and two other psychologists with a PCA expertise, who gradually took charge of supervision. For a more detailed overview of the AVI protocol, see Cyr et al. (2012; 2020 in revision) and Moss et al. (2018).

Psychoeducative intervention *(PI).* The PI consisted of educative and didactic activities which were normally used by CPS to stimulate parenting capacities. The activities that were used were selected from existing programs such as the Abecedarian project and ALI program which have shown beneficial effects for children of high-risk families with cognitive and language development difficulties (Campbell & Ramey, 1994; Ramey & Campbell, 1984; Verreault et al., 2005; Whitehurst et al., 1988). The goal of the sessions is to teach parents about child development and parenting skills. During daily activities (e.g., feeding or nap time) and prompted didactic activities (e.g., interactive reading), parents look at demonstrations or receive instructions from the evaluator for ways to stimulate the child. Through modeling of desired parenting behaviours, positive parenting skills are promoted. PCA evaluators of the PI protocol could discuss cases among themselves and supervision meetings were organized with CPS supervisors. Similar to the AVI evaluators, all PI evaluators had a college degree in psychoeducation and more than 5 years of experience in conducting PCAs with CPS. PI evaluators discussed cases among themselves during team meetings not involving AVI evaluators.

Measures

Demographic variables

During the first pre-test (home) visit, the primary caregiver filled out a questionnaire on sociodemographic variables.

Children's CPS files

Files were consulted by research assistants to gather information on the children's types of maltreatment and their care arrangements at pre-test (in placement or not).

Quality of parent-child interaction

Quality of the parent–child interaction was observed during the lab visits at both pre- and post-test with **a** coding system developed by Moss and her colleagues and used with preschool (Moss, Bureau et al., 2004) and early school-age children (Moss et al. (1998). The

parent–child dyad was filmed during a 10-min snack time episode, during which magazines and toys were available. The scales that were used to code parent–child interaction quality consisted of eight 7-point subscales (e.g., communication, emotional expression, and enjoyment) and one overall scale, ranging from high quality (sensitive parenting, reciprocity in interactions, positive-shared affect) to poor quality (indifferent, conflictual, negative affect, parent–child role-reversal). Previous studies have demonstrated that these interactive scales can distinguish children with different attachment classifications and are both concurrently and longitudinally related to behaviour problems of children from diverse socioeconomic risk backgrounds and with mothers, fathers, or foster parents as primary caregivers (e.g., Bureau et al., 2017; Dubois-Comtois et al., 2015, 2013; Moss, Bureau et al., 2004; Moss, Cyr et al., 2004). Because a principal component analysis showed that one factor explained most variance (81%), we decided to use only the overall scale. The videotapes were coded by four coders who were blind to other study measures and did not evaluate the same dyad twice. Interrater reliability was high: the intraclass correlation of the four coders ranged from .79-.89 (based on 20% of the sample).

Parental childhood trauma

To measure parental childhood trauma, the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994) was filled out by the primary caregiver during pre-test. The CTQ is a self-report questionnaire that contains 70 items concerning exposure to adverse childhood experiences. The items relate to different forms of maltreatment (physical, sexual, and emotional abuse, and physical and emotional neglect) and are rated on a 5-point scale ranging from *never true* to *very often true*. Example items include "People in my family hit me so hard it left me with bruises or marks" or "People in my family said hurtful or insulting things to me". We used an aggregated overall score in the analyses; higher scores indicated that the parent had experienced more childhood trauma (α in current sample = .96). The original CTQ (70 items) has been validated in a Canadian sample (Paivio & Cramer, 2004). To give insight into the prevalence of childhood trauma in our sample, we reported on the 1) the absence to minimal presence (none or minimal levels) and 2) the marked presence (moderate to severe levels) of childhood maltreatment, according to the different subscales. Because there are no validated cut-off scores for the original CTQ, we computed these scores based on the CTQ short-form items (Bernstein & Fink, 1998).

Analyses

Although 88 dyads completed post-test, only 66 of these parents had also filled out the CTQ at pre-test. Little's Missing Completely At Random (MCAR) test including relevant covariates (e.g., gender, age, parental education, type of maltreatment) was not significant (χ^2 (86) = 80.46, p = .65), which implies that missing CTQ values were likely missing completely at random. In order to include all 88 participants who completed post-test measures, we used multiple imputation to impute missing values on the CTQ. Multiple imputation is considered a solid approach to handle missing data (Rubin, 1987; Van Ginkel et al., 2019). We used predictive mean matching as a method for imputation and specified 50 iterations (fully conditional specifications). Relevant covariates (included in Table 1) were included as predictors in the imputation procedure. Following recommendations from Enders et al. (2014) and Von Hippel (2009), we computed interaction terms prior to

Table 1. Descriptive statistics for the two intervention groups, comparison group, and drop-out ($N = 123$).

	Participating Families									Dropped out families		
			Randomized groups[b]				Comparison group[c]					
	Total Participating families ($N = 88$)		Attachment Videofeedback Intervention (AVI) ($n = 29$)		Psychoeducational Intervention (PI) ($n = 19$)		Regular PCA[d] Services (RS) ($n = 40$)			($N = 35$)		
Study variables pre-test	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*F*	*M*	*(SD)*	*F*
Parental trauma ($n = 66$)	11.81	(5.18)	9.42	(3.74)	11.44	(4.66)	13.59	(5.67)	4.53*	11.98	(4.72)	0.03
Parent-child interactive quality	3.24	(0.91)	3.24	(0.83)	3.42	(1.12)	3.15	(0.86)	0.57	3.11	(0.85)	0.49
Sociodemogaphic												
Child age (months)	16.90	(20.70)	19.03	(21.40)	13.32	(17.51)	17.06	(21.82)	0.43	17.90	(17.28)	0.07
Parent age (years)	27.57	(6.67)	27.57	(6.44)	27.57	(7.92)	27.58	(6.67)	0.00	27.17	(6.56)	0.07
	n	%	*n*	%	*n*	%	*n*	%	X^2	*n*	%	X^2
Child gender (boys)	52	59	17	59	14	74	21	53	2.40	18	51	0.60
Child in foster care	14	16	7	24	3	16	4	10	2.51	10	29	2.56
Adolescent mother/father	20	23	5	17	5	26	11	28	1.05	11	31	0.75
Parental education (No high school diploma)	67	76	24	83	13	72	30	73	1.05	29	83	0.66
Unemployed/social welfare	76	86	25	86	18	95	33	83	1.64	29	83	0.45
Ethnic minority	26	30	8	28	6	32	23	30	0.10	10	29	0.05
Child maltreatment[a]												
Neglect	69	78	21	72	13	68	35	88	3.69	26	74	0.24
Sexual abuse	11	13	4	14	6	32	1	3	10.03*	4	11	0.00
Psychological abuse	28	32	9	31	4	21	5	38	1.62	12	34	0.15
Physical abuse	24	27	5	17	6	32	13	15	2.20	14	40	2.29

Note. [a]Child maltreatment classifications were based on child official records obtained from Child Protective Services. [b]Families recruited at the Parenting Capacity clinic. [c]Maltreating families recruited outside the clinic. [d]PCA: Parenting Capacity Assessment.

imputation. Results were pooled from 50 imputed datasets. To investigate whether the effects of AVI on parent–child interactive quality were moderated by parental childhood trauma, we conducted a regression analysis including pretest parent–child interactive quality scores, parental childhood trauma, and the main effects for condition (two dummy-coded variables with AVI as the reference group: 1) PI vs AVI and 2) RS vs AVI) in the first model, and two interaction terms (PI vs AVI X parental trauma and RS vs AVI X parental trauma) in the second model. Parental childhood trauma and the two interaction terms were centred by using the mean score for each imputed dataset. Data inspection on complete cases revealed that all numerical variables approached a normal distribution and no outlier was present (*z*-values were within ±3.29 from the mean). Pooled F-tests for the different regression models were obtained using the mixed model macro by Van Ginkel (2019). Because there is yet, to our knowledge, no pooling method available in SPSS for Beta's and the values of R^2 in regression analyses, we averaged Beta's across all imputed results to get a rough indication of the effect sizes for the regression model and coefficients (Van Ginkel, 2019).

After these analyses on 88 participants, we additionally performed a regression analysis on imputed data for the whole sample (N = 123), to be able to include all randomized families and to maximize power. Of the 123 participants who completed pre-test, 90 had filled out the CTQ. We used a similar imputation procedure and imputed data for the variables: 1) parental childhood trauma at pre-test (26.8% missing due to incomplete pre-test visits) and 2) parent–child interactive quality at pre-test (6.5% missing due to technical problems) and post-test (28.5% missing). We compared model estimates and regression coefficients between both approaches. In all our analyses, at most 28.5% of the observations of each variable were missing. According to Jakobsen et al. (2017), a maximum of 40% missing data is recommended as a rule of thumb for applying multiple imputation. All analyses were performed in SPSS Version 25 with a significance level of $\alpha = .05$.

Results

Preliminary analyses

Chi-square tests and one-way analyses of variance (ANOVAs) were performed to check for group differences between the AVI, PI, and RS groups (see Table 1). The RS group differed from the AVI and PI groups with respect to the occurrence of sexual abuse in the participating families (this occurred more often in the AVI [14%] and PI groups [32%] than in the RS group [3%]). Moreover, parents in the RS group reported higher levels of parental childhood trauma than parents in the AVI group. No significant group differences were found on any of the other demographic or study variables. The fact that the AVI and PI groups did not differ on any of the covariates indicates that randomization was successful. Finally, chi-square tests and one-way ANOVAs showed that there were no differences on demographic or pre-test study variables between parent–child dyads who completed the project and those who dropped out. For an overview of all descriptive statistics and results, see Table 1.

Presence of parental childhood trauma

Only 13% of the parents reported none or minimal childhood trauma and the large majority (75%) reported moderate to severe levels of childhood trauma. Specifically, 45% of the parents reported moderate to severe levels of physical neglect, 46% emotional neglect, 36% physical abuse, 42% emotional abuse, and 60% sexual abuse. These percentages are partly overlapping: 52% of the parents reported moderate to severe levels of childhood maltreatment on more than one subtype. Thus, high levels of parental childhood trauma were present in this sample.

Intervention effects moderated by parental childhood trauma

Results of the multiple regression analysis on CTQ-imputed cases (n = 88) are summarized in Table 2. The regression model including the main effects for the intervention confirmed that parents in the AVI group showed greater improvements in quality of interaction than parents in both the PI (β = −.24) and RS (β = −.26) groups (F(4,81) = 5.89, p < .01) and this accounted for 23% of the variance. The second model including the two interaction terms of the dummy variables X parental childhood trauma was also significant (F(2,78) = 3.37, p = .04) and accounted for an additional 7% of the variance. The regression coefficients for the interactions of PI vs AVI X parental childhood trauma (β = .26) and RS vs AVI X parental childhood trauma (β = .35) were both significant (see Table 2).

Repeating the analysis when multiple imputation was applied to all randomized participants on both CTQ and post-test measures (N = 123) led to a similar pattern for the direction of regression coefficients and model estimates. However, although the interaction of RS vs AVI X parental childhood trauma remained significant (B = .14, β = .34, t = 2.24, p = .03), the interaction term of PI vs AVI X parental childhood trauma was marginally significant in this model (B = .14, β = .24, t = 1.84, p = .07). Hence, to be most conservative, we only explored the interaction effect comparing the AVI to the RS groups. In Figure 2, intervention effects are illustrated for subgroups of parents with high and low levels of parental childhood trauma. A visual inspection of the slopes for the AVI

Table 2. Multiple regression analysis with imputed CTQ scores, and parent-child interactive quality at post-test as the outcome variable (n = 88).

	Model 1		Model 2	
Predictors	*B (SE)*	β	*B (SE)*	β
(Intercept)	2.00 (0.40)		1.88 (0.40)	
Parent-child interactive quality pre-test	0.49 (0.12)	.40 **	0.49 (0.12)	.40 **
Parental childhood trauma	−0.00 (0.02)	−.01	−0.03 (0.03)	−.12
PI-dummy[a]	−0.63 (0.30)	−.24 *	−0.33 (0.32)	−.13
RS-dummy[a]	−0.56 (0.26)	−.26 *	−0.34 (0.27)	−.15
PI-dummy*Parental childhood trauma			0.15 (0.07)	.26 *
RS-dummy*Parental childhood trauma			0.15 (0.06)	.35 *
F		5.89 **		3.37 *
ΔR^2 (adj.)		.23		.07
Total R^2		.23		.25

[a]dummy-coded: PI = psychoeducational intervention, RS = regular PCA services; AVI = Attachment Video-Feedback Intervention (reference group)

*p <.05

**p <.01

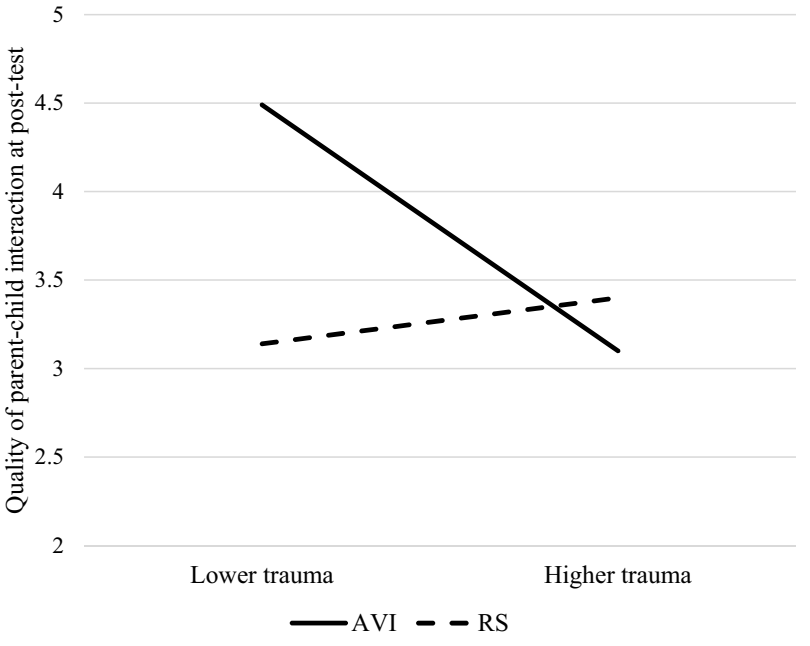

Figure 2. Visual Illustration of the Moderating Role of Parental Childhood Trauma on AVI Intervention Effects on complete data ($n = 52$). Slopes are Displayed for Lower (< 1 SD from the mean) and Higher (> 1 SD from the mean) Levels of Parental Childhood Trauma (AVI: Attachment Video-feedback Intervention; RS: Regular PCA Services).

and RS groups indicate that the AVI intervention was more effective in improving parental sensitivity for parents with lower levels of childhood trauma.

Discussion

This study aimed to add to the current knowledge on effective attachment-based interventions for maltreating parents and their children by identifying which families are more or less likely to benefit from these interventions. Results of this study showed that a short-term, attachment-based video-feedback intervention was effective in enhancing parent–child interactive quality in maltreating families. These findings, which have been shown in another report on this data (Cyr et al., 2020 in revision), concur with an increasing amount of evidence for the effectiveness of short-term attachment-based interventions for (at risk) maltreating families (Bernard et al., 2012; Moss et al., 2011; Negrao et al., 2014) and support the implication that the pervasive, disruptive interactions which are often observed in maltreating families can be improved through a focus on parent–child attachment. However, specific to this study is the finding that some parents are less likely to benefit from these interventions. Precisely, the more AVI parents reported severe levels of childhood trauma, the less they showed improvements in parent–child interactive quality. It should be noted that the size of this interaction effect was small in magnitude, similar to Steele et al. (2019). In addition, the levels of parents' adverse childhood experiences in our sample were very high: the majority of parents reported traumatic

childhood experiences, with more than half of these parents even reporting moderate to severe levels of childhood trauma. Hence, the current study suggests that the AVI should be a preferred strategy for parents with childhood trauma, but for those with severe levels of childhood trauma, findings of this study provide further evidence that a more specific (trauma-specific) or more intensive intervention approach may be required for these families.

Similar moderating effects of parental childhood trauma have been observed in previous studies regarding the effects of attachment-based video-feedback interventions in adolescent mothers (Moran et al., 2005) and mothers at risk for maltreatment (Steele et al., 2019), and have also been reported in a meta-analytic study with respect to general treatment outcomes for depressed patients (Nanni et al., 2012). Nevertheless, not all studies have reported moderating effects of childhood trauma in this direction. A recent RCT with a sample of parents referred to CPS found the opposite effect: Parents who experienced physical abuse in their childhood had benefitted more from a short-term attachment-based intervention than those without such experiences (Pasalich et al., 2019). One difference with the current study is that Pasalich et al. (2019) only included childhood abuse, and not childhood neglect histories in their analyses. In the analyses for this study, we did not distinguish between different types of child maltreatment, but rather considered the overall presence of parents' childhood abuse and neglect experiences. Parents with complex childhood trauma, involving an exposure to various and multiple traumatic events of various consequences, and perhaps resembling parents of our own study who had more severe levels of childhood trauma, may precisely be those more resistant to treatment effects.

One explanation for the fact that AVI parents with severe levels of childhood trauma had benefitted less from the intervention than those with lower childhood trauma might be related to the negative effects of these childhood adversities on their current functioning. Through the often and chronic stressful experiences of child maltreatment, children's stress regulation can be severely disrupted, increasing their risk to develop psychopathology such as posttraumatic stress disorder later in their lives (De Bellis & Zisk, 2014). Parents who have been maltreated as a child are thus at greater risk to show trauma symptoms, including intrusion (e.g., flashbacks of the traumatic event) and avoidance symptoms (e.g., avoiding thoughts about the traumatic event [American Psychiatric American Psychiatric Association, 2013]) that can be reenacted by the mere presence of their child or the thought of having to care for them. In addition, these parents are at greater risk to show other types of trauma-related psychopathology (Kessler et al., 2010). This may not only increase their likelihood of showing more negative interactive patterns with their own children (Lyons-Ruth & Block, 1996), but it may also affect their ability to fully engage in an intervention, especially a parent–child training intervention. For instance, it could be that witnessing video sequences from their own interactions with their child is particularly stressful as this might activate emotions of fear, confusion, anger, or helplessness related to the trauma of their past negative interactions with their own caregivers. They also might be less engaged in the intervention in order to avoid having to re-experience these trauma-related emotions. Another specific source of stress for the parents in our study is that all were undergoing a parental capacity assessment, with the potential risk of seeing their parental rights terminated at the end of the PCA. Although parents exposed to the AVI generally seemed more engaged and less defensive towards the evaluation process than those exposed to the PI or RS no-intervention protocols, as reported anecdotally by evaluators, these

aforementioned sources of stress could have certainly interfered with the parents' ability to profit from new and more positive parent–child interactions. This might imply that parents who are severely affected by their traumatic childhood experiences would need a concurrent or prior specific intervention component focused on the processing of their individual trauma to optimally benefit from an attachment parenting intervention focused on parent–child interactions.

Another explanation for the weakened intervention effects for parents with severe levels of childhood trauma could be that they have more difficulties in reflective functioning. One study showed that maltreating parents' trauma-related mentalization – which refers to parents' ability to reflect on the impact of their own traumatic childhood experiences – was related to an increased risk of disorganized attachment in their children (Berthelot et al., 2015). A trauma-informed component could therefore be that more attention is paid to promote parents' reflective functioning – helping parents distinguish between their own past experiences as a child and those occurring with their actual child, as well as the impact of their traumatic childhood experiences on the actual relationship with their child – in order for them to benefit more from a parenting intervention. Even though this might be challenging, because many parents with adverse childhood experiences might consider mentalizing as threatening and frightening and they may have limited intellectual resources to do so, the fruitfulness of such an approach has also been suggested by a panel of stakeholders who work with traumatized parents (Berthelot et al., 2018). Perhaps one way to successfully integrate a mentalization focus in short parenting interventions is to provide more sessions so that the parent–practitioner relationship can be strengthened. If the parent is able to use the practitioner as a supportive ally, it might be easier to open up, explore, and reflect on their traumatic experiences.

A general note to the current study's findings is that there is quite some variability in the extent with which parental trauma is addressed in existing attachment-based interventions. In the AVI intervention, parental trauma is not an explicit theme, even though the topic is addressed if the practitioner feels the need to do so. If the practitioner notes that traumatic experiences of the parent interfere with the parent–child relationship, this link will be discussed with the parent. Thus, whenever relevant, the practitioner helps the parent to become aware of the link between his or her own traumatic experiences and current parenting behaviour. Nevertheless, reducing parental trauma symptoms is not an explicit goal of the AVI. Some other attachment-based interventions, such as CPP (Lieberman et al., 2005, 2006) or the ABC intervention (Bernard et al., 2012), focus more explicitly on parental trauma. For instance, in the ABC intervention several sessions address "voices from the past", so that the link between parents' own disturbed caregiving experiences in their childhood and their current parenting behaviour is always explicitly discussed. It would, therefore, be interesting to know whether parental trauma also interferes with the effects of these interventions. On the other hand, based on what we have argued before, we would hypothesize that if parents suffer from severe trauma symptoms, specialized trauma-informed intervention would be additionally needed for them in order to show more progress in their parenting behaviour.

Limitations

Some limitations of this study should be mentioned. First, we used a retrospective self-report measure to assess parents' childhood trauma experiences. Because there is

generally little overlap between prospective and retrospective reports of child maltreatment (Baldwin et al., 2019) and potential risks of self-report measures include either over- or underreporting of child maltreatment, it may be that this is not a true reflection of the actual presence of parents' childhood maltreatment in this sample. On the other hand, excellent reliability and validity rates of the CTQ have been reported, also in clinical samples (Bernstein et al., 1997, 1994) and in the current sample (α = .96), which suggests that this measure should provide a reasonable indication of the actual presence of childhood maltreatment in this sample.

Another limitation is related to the current study design, as this included a non-randomized comparison group. Evidence for the interaction effect was most convincing for the comparison between parents who received AVI and parents who were not randomized and received a regular parenting capacity assessment (which did not include an intervention component), and in this latter group, higher levels of childhood trauma were reported by the parents. When the two randomized groups (AVI and PI) were compared, the interaction effect was significant in the complete case analysis, but only marginally significant after multiple imputations were applied. However, considering that the psychoeducative intervention group (PI) was quite small , and the regression coefficients of the interaction effects were similar in the complete and imputed analyses, this might be attributed to power issues.

Implications for research and clinical practice

The finding that maltreating parents who were most severely affected by their own childhood adversities responded less well to an attachment-based parenting intervention implicates that the identification of this group is important for clinical practice. Perhaps these parents need an extra intervention component focused on the processing of their individual trauma (Madigan et al., 2015), or they might benefit more from interventions with a higher intensity so that they can use their practitioner as a supportive ally with whom they feel safe to mentalize about their past trauma experiences. More research is needed to gain more knowledge on the best approach for this purpose. Also, in future studies, it would be informative to expand the current and previous studies' results by examining the effectiveness of the AVI on different outcome variables than the quality of the parent–child relationship. For instance, the specific group of traumatized parents might show less parental stress or a greater sense of parental efficacy. Obviously, more research is needed to refine actual interventions and better match the individual needs of parents with adverse childhood experiences.

Conclusion

In conclusion, this study replicated previous findings that a short term, attachment-based video-feedback intervention can be effective in enhancing parent–child interactive quality in a sample of maltreating parents. In addition, a small but significant interaction effect was found, such that parents with more severe levels of childhood trauma are less likely to benefit from this intervention.

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