

Factors contributing to continuity and discontinuity in child psychopathology from infancy to childhood: An explorative study

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Abstract

This study examined the psychopathology and socioemotional functioning of school-aged children treated during infancy and a comparison group of children without symptoms or treatment history. Our goal was to identify the factors associated with the continuity of psychopathology from infancy to childhood. The sample comprised 54 Israeli children, 30 with treatment history as infants in an infant mental health clinic and 24 with no treatment history. A 2 × 2 study design, with treatment history (treated/non-treated) and current psychiatric diagnosis (diagnosed vs. non-diagnosed), was used and group differences in children's psychopathology (Development and Well-Being Assessment (DAWBA)), socioemotional functioning (Vineland Adaptive Behavior Scales–Second Edition (VABS-II)), maternal stress (Parenting Stress Index-Short Form (PSI/SF)) and psychopathology (Symptom Checklist-90-Revised (SCL-90-R)), family functioning (Family Assessment Device (FAD)), and mother–child relational patterns (Coding Interactive Behavior (CIB)) were assessed. We found no differences between the previously treated and non-treated groups in the rate of given *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR)* diagnosis. However, there was an interactive effect of treatment history × current psychiatric diagnosis, with the highest level of maternal stress in mothers of children exhibiting both early and late emotional and/or behavioral symptoms. Implications of these findings for identifying children and families at risk for continued child psychopathology and the importance of early parent–child psychotherapy interventions are discussed.

Keywords

Infant psychopathology, parent–infant intervention, infant mental health, parental stress, family functioning

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Introduction

Infant regulatory difficulties, expressed as excessive crying, eating and sleeping difficulties, aggression, fears and anxieties, parental stress and psychopathology and disturbed parent–infant relationships are common complaints during infancy (Barlow et al., 2016). At times, these early symptoms and the related parental stress and strained parent–child relationship become severe enough that they lead to a referral for treatment in an infant mental health (IMH) clinic (Hemmi et al., 2011; Mothander et al., 2018). The goal of the current study is to trace these infants into late childhood and assess their current socioemotional and psychiatric functioning.

Within the field of IMH, infants' socioemotional wellbeing, as well as symptoms related to their functioning and relationships, is conceptualized as reflecting an interplay between risks and protective factors and bidirectional influences between the infant and the social environment (Zeanah & Doyle, 2012). For example, persistent behavior problems and excessive infant crying can burden the parent–infant system (Bolten, 2012), leading to parental frustration and alienation and placing the infant's wellbeing and development at risk (Papoušek, 2011). Likewise, utilizing attachment theory, Lyons-Ruth (1996) outlined the interplay between a mother's failure to respond to her infant's appropriate attachment needs, reflecting her own distress and developmental history, the development of disorganized attachment in her child, and the emergence and continuity of the child's aggressive behavior. In line with this conceptualization, early interventions sought to improve the infant's wellbeing by focusing simultaneously on the infant, the parents, and the parent–infant relationship (Barlow & Svanberg, 2009; Mothander et al., 2018). These interventions have proven to be effective in improving parenting skills, parent–child interactive patterns, and the child's socioemotional wellbeing (Bakermans-Kranenburg et al., 2005; Bergström et al., 2020; Fukkink, 2008), as well as in reducing parental stress and psychopathology (Huber et al., 2016). However, less is known about the conditions under which patterns of child maladaptation persist and create a continuity in psychopathology from infancy to childhood, as opposed to the factors that promote the desistance of these early symptoms, leading to psychopathology discontinuity (Luby et al., 2019).

Studies have noted several risk factors as contributing to the emergence of early infant functional and relational symptoms and their continuity into late childhood. Inadequate parenting practices and disturbed parent–infant relationships are often suggested as contributing to continued early psychopathology. For example, poor parenting during infancy, displayed as negative maternal regard for the infant's needs during feeding interactions, has been linked to externalizing problems during the preschool phase, first grade, and adulthood (Lorber & Egeland, 2009). Inconsistent parenting behaviors, lack of boundaries, and parental criticism during the early years (Rutter & Stevenson, 2008), as well as parental over- or under-control, have similarly been connected to the emergence and continuation of disruptive behavior among children (Degnan et al., 2008). Finally, researchers have linked maternal over-stimulation during infancy to an increased risk for psychopathology in children up to the age of 19 years (Schmid et al., 2011).

Parental psychopathology is also known to place children at risk for continued psychopathology. Parental psychopathology, particularly depressive symptoms, is very prevalent among parents of infants who display functional and behavioral symptoms (Mothander & Moe, 2010). Early maternal depression is associated with older children's difficulties in school and with peers (Wright et al., 2000) and their internalizing and externalizing behavior problems (Fihrer et al., 2009). Furthermore, research shows that parental psychopathology and child maladaptation are reciprocally linked. Accordingly, disruptive child behavior during toddlerhood has been associated with persistent maternal depressive symptoms, which in turn have been linked to an increased risk of children's antisocial behavior during late childhood and adolescence (Gross et al., 2009).

Parental stress is also considered a risk factor for child development, both as a potential cause or a consequence of the child's difficulties (Crnic & Greenberg, 1987). Parental stress is linked to regulatory difficulties in infants and less favorable child development at 1 year of age (Sidor et al., 2013). Parents of children treated for behavioral problems have reported significantly more stress than a comparison group of non-treated children (Solem et al., 2011). Researchers have posited a link between parental stress and poor parent-child interactions, which, in turn, are associated with internalizing and externalizing behavior problems as the child grows up (Dubois-Comtois et al., 2013). Likewise, parental stress is also linked with strained and negative family functioning, which further interferes with parent-child interactions and parenting behaviors (Sturge-Apple et al., 2014). For example, families of infants referred and treated in an IMH clinic exhibited more disturbed family communication patterns and negative emotional atmospheres than non-referred families. Poor family functioning was also associated with self-reported maternal psychopathology (Keren et al., 2010).

The last decade has witnessed a substantial growth in the field of parent-infant interventions. These interventions target the parent-infant relationship as well as the family system on a behavioral and representational level (Stern, 2004). Whereas the different interventions vary in their targeted populations, treatment models, and techniques, they all try to improve the parent-child relationship in order to enhance the child's mental health and socioemotional adjustment (Barlow & Svanberg, 2009) and hence may be important in the context of continuity and discontinuity in psychopathology. As noted above, there is a significant body of research documenting the interventions' effectiveness. However, a major limitation of many of these studies is their reliance on relatively short-term outcomes and follow-up assessments. While some studies with longer follow-up periods have reported positive, long-term outcomes for mothers, children, and families, especially in terms of reduced parental stress and improved family functioning (Mckelvey et al., 2015), others have indicated variations in the stability of intervention effects, depending on parental psychopathology (Rayce et al., 2020), family stress levels, and duration of the intervention (Lyons-Ruth & Easterbrooks, 2006).

Our goal is to explore the relatively unstudied issue of the continuity and discontinuity of early psychopathology among children treated as infants in an IMH clinic and to examine the parental and family factors associated with later psychopathology and adjustment difficulties. As outlined above, substantial research has documented the contribution of parental and family risk factors to the emergence and maintenance of early psychopathology. Furthermore, accumulating studies have shown the effectiveness of parent-infant psychotherapy to ameliorating infant symptoms, at least in the short term. However, less is known about the long-term adjustment of previously treated children and families and about the specific contexts in which early socioemotional difficulties may persist. Thus, we used retrospective data along with subsequent childhood psychiatric and psychosocial assessment and observational data to examine the likelihood of continued psychopathology from infancy to late childhood. In addition, we investigated the contribution of family and parent stress and psychopathology factors to this continuity. Finally, in this pilot study, we also sought to identify the characteristics associated with continued psychopathology within the early treated group (i.e., early indications of psychopathology) versus favorable socioemotional adaptation (i.e., lack of late-childhood psychopathology within this group), indicating psychopathology's discontinuity.

To achieve the study's goals, we used a group of Israeli school-aged children who had been referred and treated as infants at a public IMH clinic due to various functional and relational symptoms (early indications of psychopathology). We also created a comparison group of non-referred and non-treated children (indicating no known early psychopathology) of similar ages and

socioeconomic backgrounds. Both groups underwent a thorough psychiatric, psychosocial, and family assessment.

We investigated three main questions: (1) Is early infant-related psychopathology linked with later psychopathology? (2) Do children who present with later psychopathology show the common risk factors associated with early psychopathology, such as more family- and parent-related risk factors? and (3) Are the cited risk factors more prevalent among children showing prolonged psychopathology (i.e., early signs of psychopathology and later psychopathology)?

Based on these broad questions, we posited and tested four specific hypotheses.

Hypothesis 1 (H1). The rates of current *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision* (DSM-IV-TR) psychiatric diagnosis differ in the early treated and the non-treated groups 6–8 years following treatment.

Hypothesis 2 (H2). Across the two groups (treated and non-treated), children who meet the criteria for psychiatric diagnosis during late childhood exhibit poorer child, family, parental, and mother–child relational functioning than non-diagnosed children.

Hypothesis 3 (H3). The combination of treated-group status and late-childhood diagnosis (i.e., psychopathology continuity) is linked to poor child, family, parental, and mother–child functioning.

Hypothesis 4 (H4). Treated children who also meet the criteria for late-childhood diagnosis (i.e., continued psychopathology) exhibit poorer child, family, parental, and mother–child functioning than treated children who outgrow early psychopathology.

Method

Setting

The setting for the current investigation is a community-based, public IMH clinic in Israel, offering evaluation and treatment to parents and their 0- to 3-year-old children. The clinic serves a heterogeneous ethnic and socioeconomic urban population. Reasons for referrals include infant sleeping, eating, and behavior difficulties; infant regulatory problems; parental psychopathology; and difficulties within the parent–infant relationship. The therapeutic approach targets the parent–child interaction, the child's behavior, and the parents' internal world and representations. Infants and their parents participate in weekly, 50-minute joint dyadic or triadic therapy sessions, where mutual play is encouraged, parents' concerns are discussed, and parental anxieties and projections are identified and addressed. Treatment protocol is flexible and individually tailored to meet each family's unique needs.

Participants

This study is a follow-up on children who had been treated in the clinic and were younger than 12 years old at the time of the follow-up. We invited 50 families to participate, and of them, 30 mother–child dyads consented and comprised the treated, early psychopathology group. Refusals were mostly due to technical and logistical difficulties (e.g., geographic relocation, difficulty setting up an appointment, difficulty getting to the clinic). The comparison of non-treated group comprised 24 mother–child dyads drawn from the same catchment area and matched to the treated

Table 1. Demographics of early treated and non-treated groups.

	Treated (n=30)	Non-treated (n=24)	t/ χ^2
Child's characteristics			
Gender: Boys	15 (50%)	17(70.8%)	n.s.
Age (months)	M= 104.28 SD=25.64	M=99.00 SD= 19.72	n.s.
Birth order: First	16 (53.33%)	13 (54.17%)	n.s.
Mother's characteristics			
Age (years)	M= 39.80 SD=7.02	M= 38.67 SD= 3.99	n.s.
Mother's education (years)	M= 14.43 SD=2.63	M= 15.08 SD= 1.95	n.s.
Household composition			
Two-parent Household	23 (76.67%)	22 (91.67%)	n.s.
Mother's employment			
Full-time	7 (23.3%)	15 (62.5%)	$\chi^2= 11.89$ $p= .008$
Part-time	15 (50.0%)	9 (37.5%)	
Unemployed	6 (20%)	0 (0%)	
Unknown	2 (6.7%)	0 (0%)	
Household income			
Above average	12 (40%)	19 (79.17%)	$\chi^2= 11.19$ $p= .01$
Average	9 (30%)	5 (20.83%)	
Below average	7 (23.33%)	0 (0%)	
Unknown	2 (6.66%)	0 (0%)	

SD: standard deviation.

group, based on the child's gender and age (to within 6 months). The comparison group was recruited through advertisements posted in schools around the city, inviting qualifying volunteers to contact the clinic and participate in the study. Exclusion criteria for the comparison group were reports of the child's early psychopathology or having received psychological treatment, whether during infancy or later. A shortage of volunteer families resulted in the groups' being of unequal size; nonetheless, they were matched on most relevant background characteristics (see Table 1).

The final sample consisted of 54 participants (32 boys, 59.3%), ranging in age from 5 years to 12 years and 6 months ($M_{\text{age}} = 8$ years, 5 months, $SD_{\text{age}} = 1.91$). Most children were firstborn (53.7%), and most households had two parents (83.3%). Mothers' mean age was 39.28 years (range: 30–57 years) with an average of 14.73 (range: 12–20) years of schooling. Household income varied between above average (57.4%), average (25.9%), and below average (13%), compared with local Israeli standards. Participation in the study was voluntary for both groups, with families receiving no financial incentives. However, as an act of gratitude for participation, interested families were offered an extended, complimentary psychiatric consultation with the second author.

Procedure

The hospital's Ethics Committee approved the study. We contacted previously clinic-treated and non-treated volunteer families by phone and invited them to participate in the study. During the initial phone conversation, mothers of the non-treated children were asked whether the children

had shown any major signs of psychopathology during infancy and whether they had been treated due to socioemotional difficulties during infancy and beyond. If the mothers said yes, we excluded them from the study. Consenting mothers and children were invited to the clinic where they signed a consent form and where the assessment was carried out. These assessments were administered to the mothers rather than the Development and Well-Being Assessment (DAWBA) and the Vineland Adaptive Behavior Scales–Second Edition (VABS-II), followed by a request to complete a set of questionnaires. Mother–child dyads also participated in two 10-minute, semi-structured interaction episodes, during which they were asked to plan an activity that they could enjoy together and to discuss and resolve a conflict that they experienced between themselves recently. These two episodes were videotaped and counter-balanced in order.

Measures

We obtained demographic data from the mothers through a questionnaire designed for this study, consisting of questions regarding the child's age, gender, general health, birth order, present and past psychological treatments, parents' age, education and work status, family composition, and household income.

Infant psychopathology was determined by the Diagnostic Classification of Mental Health Disorders of Infancy and Early Childhood (DC: 0-3R; Zero to Three, 2005). Diagnoses were retrieved from the charts and were used to classify the referred infants' symptomatology. The DC: 0-3R (and its updated version, DC: 0-5, 2016) is the most commonly used classification system for mental health and developmental disorders of infancy and early childhood. The DC: 0-3R targets children aged 0–3 years and categorizes emotional and behavioral patterns representing significant deviations from normative development in the early years. Similar to the DSM, the DC: 0-3R is a multi-axial system, with Axis I denoting an infant's clinical disorder and Axis II denoting a relationship classification. The DC: 0-3R has been used in numerous studies and has demonstrated adequate psychometric properties (Mothander & Moe, 2010). The current study used the DC: 0-3R, as the updated DC: 0-5 was not yet available at the time of data collection.

The school-aged children's psychiatric status was assessed with the Development and Well-Being Assessment (DAWBA; Goodman et al., 2000). The DAWBA is a package of interviews, questionnaires, and rating techniques designed to generate International Classification of Diseases (10th revision (ICD-10)) and DSM-IV-TR Axis I diagnoses on children aged 5–17 years. The parent interview section of the DAWBA, comprising 67 questions and lasting approximately 50 minutes, was used. Mothers were asked in detail about the presence of symptoms in the child, their severity, and their impact on the child and the family. The interview information was transcribed by the administrator and then scored blindly by the second author (a child psychiatrist). The DAWBA has been used in many epidemiologic and clinical studies and has demonstrated adequate validity and reliability in various countries, including Israel (Zalsman et al., 2016).

We measured the child's socioemotional adaptation with the Vineland Adaptive Behavior Scales, Second Edition (VABS-II; Sparrow et al., 2005). The VABS-II is a widely used, 20- to 60-minute long, parent survey assessing the child's daily functioning and adaptive behavior. The VABS-II measures the child's functioning in four separate domains (Communication, Daily Living, Socialization, and Motor Skills) and also yields an overall Adaptive Behavior Composite (ABC) score. Higher scores indicate higher levels of adaptive functioning. The VABS-II manual provides updated reliability and validity reports reflecting the good psychometric qualities of the instrument for the age group and population covered by the current study. The VAB-II has been translated into Hebrew and has been used in different settings in Israel (Yirmiya et al., 2006). The VABS-II was

coded by a trained psychologist who was blind to the study's research questions and the children's psychiatric histories. In the current study, the ABC score was used.

We measured maternal psychopathology with the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1994). The SCL-90-R is a widely used, self-report inventory designed to reflect patterns of psychological symptoms in adults. The scale comprises 90 items, all presented on a 5-point Likert-type scale, ranging from 0 (*no problem*) to 4 (*severe*). The items are aggregated into nine subscales and a total score, denoted as the Global Severity Index (GSI), with higher scores indicating greater psychopathology. The SCL-90-R has been used with both general and psychiatric populations and has been shown to have adequate validity, internal consistency, and test-retest reliability. The Hebrew version of the scale has been used and validated in Israel (Hoofien et al., 2005). The current study used the GSI score, which showed high internal reliability (Cronbach's $\alpha = .96$).

Maternal parenting stress was measured by the Parenting Stress Index-Short Form (PSI/SF; Abidin, 1995). The PSI/SF is a 36-item self-report questionnaire measuring stress associated with the parenting role. Mothers were asked to respond to the items presented on a 5-point Likert-type scale describing the extent to which each of the statements was disturbing for them in the past week. The PSI/SF yields three subscales (Parental Distress, Parent-Child Dysfunctional Interaction and Difficult Child) that can be combined into a PSI/SF total score. We used the total parenting stress score, with higher scores indicating more subjective stress. Reports indicate that the internal consistency of the PSI/SF total score is good (Haskett et al., 2006) and the internal reliability for our study was high (Cronbach's $\alpha = .94$).

Family functioning was assessed with the Family Assessment Device (FAD; Epstein et al., 1983). The FAD is a 60-item, 15–20 minute long, self-report measure based on the McMaster Model of Family Functioning (MMFF). The model measures the structural and organizational properties of a family and the patterns of transactions among family members. The FAD consists of statements describing various aspects of family functioning such as communication, problem solving, roles, affective responsiveness, affective involvement, and behavior control, and asks the respondents to rate the degree to which they agree that the statements describe their family on a 4-point Likert-type scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). A general functioning scale, which assesses the family's overall functioning by incorporating items from each of the scales, is available and was used in our study. Higher score on this scale denotes greater family dysfunction. The FAD has been used with diversified families in different cultures and has been reported to have adequate validity and reliability features (Miller et al., 2000). Reliability for our study was high (Cronbach's $\alpha = .94$).

Observations and coding

Two semi-structured, developmentally relevant interaction episodes, during which the mother and child planned a pleasurable activity (*Funday*) and discussed a conflict between them (*Conflict*), were used to assess mother-child relational patterns. The episodes were coded with the Coding Interactive Behavior (CIB) manual (Feldman, 1998). The CIB is a 47-item global coding system presented on a 5-point Likert-type rating scale, ranging from 1 (*slightly*) to 5 (*considerably*) and describing the interactive patterns of the parent (25 codes), the child (17 codes) and the dyad (5 codes), as well as two overall codes that aggregate into higher order composites. The system has versions for different child age groups and has been used in numerous studies covering a wide age range, including that covered in our study. The CIB has been shown to have adequate psychometric properties (Feldman et al., 2013). The composite scores used in our study included Maternal Sensitivity ($\alpha_{\text{Conflict}} = .91$; $\alpha_{\text{Funday}} = .86$); Maternal Intrusion ($\alpha_{\text{Conflict}} = .79$; $\alpha_{\text{Funday}} = .70$); Maternal

Supportive Presence ($\alpha_{\text{Conflict}} = .82$; $\alpha_{\text{Funday}} = .83$); Maternal Dialogue Skills ($\alpha_{\text{Conflict}} = .92$; $\alpha_{\text{Funday}} = .93$); Child Social Engagement ($\alpha_{\text{Conflict}} = .92$; $\alpha_{\text{Funday}} = .92$); and Dyadic Reciprocity ($\alpha_{\text{Conflict}} = .97$; $\alpha_{\text{Funday}} = .96$). We did not include the Dyadic Tension and Child Social Withdrawal composites because they did not meet adequate reliability standards. An expert coder from the system's development team, blind to both the study's hypotheses and to the children's group and psychiatric status, coded the episodes. Inter-rater reliability was calculated on 20% of the observations double-coded by the first author, blind to the children's group and psychiatric status. Intra-class coefficients (ICC) were good, ranging from .73 to .88.

Data analysis

To test our hypotheses, we used a 2×2 group design, with treatment history (treated vs. not-treated during infancy groups) and psychiatric diagnosis (diagnosed=meeting criteria for DSM-IV-TR diagnosis vs. non-diagnosed=not meeting criteria for DSM-IV-TR diagnosis on the late-childhood assessment). We first compared the early treated and non-treated groups, determining that the two groups were statistically similar on most demographics, except for mother's work status and household income (see Table 1). These variables were entered as covariates into the model, but their contribution to the model was not significant. Thus, they were not included in the final models.

To test Hypothesis 1, we compared the rate of psychiatric disorders among the treated and the non-treated groups using the chi-square test. To test Hypotheses 2 and 3, we conducted generalized linear model (GLM) multivariate analyses (SPSS 21.0), assessing differences among the four groups (treated/non-treated during infancy \times diagnosed/non-diagnosed during late-childhood assessment) on the SCL-90-R, PSI/SF, FAD, VABS-II and CIB scores and testing for the psychiatric diagnosis and treatment history main effects and the psychiatric diagnosis \times treatment history interaction effects. To test Hypothesis 4, we considered only the treated-group participants. In line with the group's sample size, we used the Mann-Whitney U parametric test and tested the differences between the diagnosed (i.e., continued psychopathology) and the non-diagnosed (i.e., psychopathology discontinuity) subgroups on the SCL-90-R, PSI/SF, FAD, VABS-II, and CIB scores.

Results

Comparing the rates of identified current DSM-IV-TR diagnosis in the early treated and non-treated groups revealed that 17 (57%) of the children in the treated group and 12 (50%) of those in the non-treated group met the criteria for DSM-IV-TR Axis I disorder based on the DAWBA. Diagnoses, regardless of group status, included Attention/Hyperactive Disorder, Disruptive Behavior Disorder, Generalized Anxiety Disorder, oppositional defiant disorder (ODD), Anxiety Disorder not otherwise specified (NOS), Conduct Disorder, Separation Anxiety Disorder, Major Depression, Specific Phobia, and reactive attachment disorder (RAD). Of the treated group, 13 children were healthy, meaning they did not meet the criteria for a psychiatric diagnosis. The difference between the two groups in the diagnosis rates was not significant ($\chi^2 = 0.24$, n.s.). Thus, H1 was refuted because the rates of DSM-IV-TR psychiatric diagnosis in the early treated and non-treated groups were not significantly different.

The GLM multivariate analysis procedure used a 2×2 design, with treatment history (treated vs. non-treated during infancy) and current psychiatric diagnosis (diagnosed vs. non-diagnosed on late-childhood assessment), creating four groups. Three separate models were tested, the first with PSI/SF, SCL-90-R, FAD, and VABS-II and the other two with CIB Conflict and Funday, respectively. Table 2 presents the means and *SDs* of the study's variables by treatment history and current

Table 2. Comparisons of group differences by treatment history and current psychiatric disorder.

Dependent variables	Non-treated group (n = 24)		Diagnosed group (n = 29)		Non-diagnosed group (n = 21)		F value	η^2	Treatment history by current psychiatric diagnosis	η^2
	M (SD)	M (SD)	M (SD)	M (SD)	F value					
PSI/SF	79.29 (19.25)	71.13 (12.15)	83.31 (14.79)	65.38 (12.96)	21.29***	.33	7.04**	.14		
SCL-90-R	.58 (.32)	.44 (.26)	.58 (.30)	.42 (.27)	3.5	.07	.53	.01		
FAD	59.88 (17.53)	51.48 (17.12)	62.04 (13.74)	48.00 (19.15)	8.05**	.16	.00	.00		
VABS(II)	322.79 (64.97)	328.17 (32.75)	312.96 (54.78)	340.86 (42.99)	3.46	.07	1.02	.02		

PSI/SF: Parenting Stress Index-Short Form; SCL-90-R: Symptom Checklist 90-Revised; FAD: Family Assessment Device; VABS(II): Vineland Adaptive Behavior Scales, second edition.

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

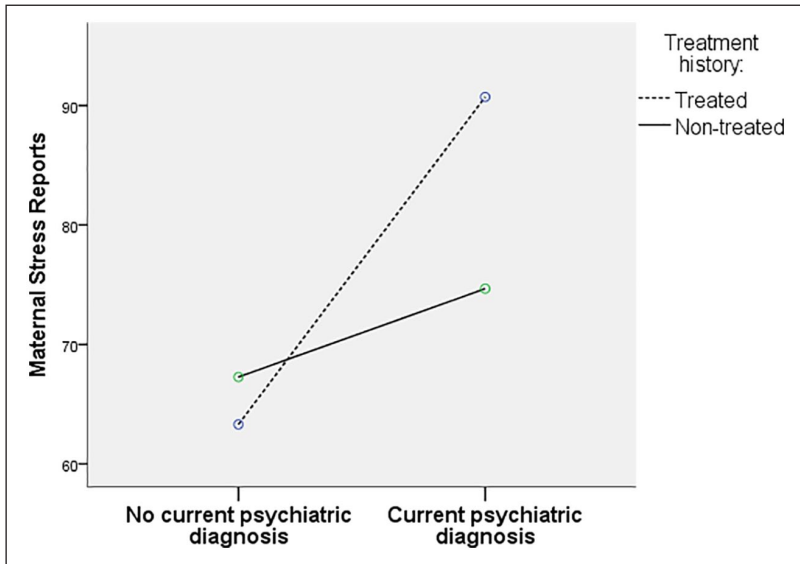


Figure 1. Maternal stress reports by treatment history and child psychiatric disorder.

psychiatric diagnosis status. Of the models tested, only the first showed significant effects, and only for current psychiatric diagnosis (Wilks' Lambda (4,40)=5.45, $p = .001$, $\eta^2 = .35$), and treatment history \times current psychiatric diagnosis interaction (Wilks' Lambda (4,40)=2.87, $p = .035$, $\eta^2 = .22$). Treatment history had no effect.

Given the significant omnibus effect in the case of current psychiatric diagnosis, we ran univariate tests to test for differences between diagnosed and non-diagnosed children on VAB-II, maternal GSI, PSI/SF, and FAD reports (see Table 2). The results showed significant differences between the diagnosed and non-diagnosed groups on the PSI/SF and FAD measures. Mothers of children diagnosed with psychiatric disorders reported significantly higher PSI/SF and FAD scores, indicating greater parental stress and poorer family functioning, respectively. Furthermore, there was an interactive effect of treatment history by current psychiatric diagnosis in the PSI/SF. Mothers of children in the treated group and with a current psychiatric diagnosis (i.e., continued psychopathology) reported the highest PSI/SF scores compared to the non-treated and the treated-group mothers of healthy, non-diagnosed children. Thus, for the most part, Hypotheses 2 and 3 were supported. Figure 1 shows the mothers' stress reports in the different groups.

Finally, comparing the early treated subgroup of children who showed late psychiatric disorders versus those who appeared healthy using the Mann-Whitney U test revealed that the diagnosed group differed significantly from the healthy, non-diagnosed group, on maternal GSI and PSI/SF reports. As the results in Table 3 indicate, we found differences in the CIB Child Social Engagement during the Funday and Conflict composites and in the CIB Maternal Dialogue Skills composite during the Funday interaction. Accordingly, diagnosed children who were previously treated appeared less engaged when interacting with their mothers, compared with healthy, non-diagnosed children who had also been treated during infancy. Mothers of diagnosed, early treated children were more stressed, showed more psychological distress, and had poorer dialogue skills than mothers of healthy, non-diagnosed children. Hence, Hypothesis 4 was mostly supported.

Table 3. Differences in child, family, and maternal functioning between children with and without late psychiatric disorders within the early treated group.

Variable	Diagnosed (<i>n</i> = 17) <i>M</i> (<i>SD</i>)	Non-diagnosed (<i>n</i> = 13) <i>M</i> (<i>SD</i>)	<i>p</i>
PSI/SF	93.75 (19.34)	64.27 (14.47)	.00**
SCL-90-R	.79 (.45)	.44 (.30)	.03*
FAD	67.56 (16.73)	55.83 (22.16)	.10
VABS(II)	292.25 (77.08)	341.62 (56.62)	.06
CIB-Conflict			
M-Sensitivity	3.60 (.87)	4.17 (.50)	.28
M-Intrusion	1.28 (.33)	1.11 (.22)	.18
M-Support	3.83 (.78)	4.53(.77)	.05
M-Dialogue Skills	3.74 (1.34)	4.75 (.49)	.04*
C-Engagement	3.13 (.75)	4.09 (1.00)	.03*
D-Reciprocity	3.68 (.84)	4.43 (.84)	.08
CIB-Funday			
M-Sensitivity	3.17 (1.06)	3.90 (.90)	.10
M-Intrusion	1.70 (.95)	1.25 (.52)	.22
M-Support	3.27 (1.36)	4.05 (1.36)	.19
M-Dialogue Skills	3.17 (1.54)	3.90 (1.23)	.28
C-Engagement	2.34 (.87)	3.64 (1.07)	.01*
D-Reciprocity	3.03 (1.15)	4.07 (1.12)	.05

PSI/SF: Parenting Stress Index-Short Form; SCL-90-R: Symptom Checklist 90-Revised; FAD: Family Assessment Device; VABS(II): Vineland Adaptive Behavior Scales, second edition; CIB: coding interactive behavior; M-Sensitivity: maternal sensitivity; M-Intrusion: maternal intrusion; M-Support: maternal supportive presence; M-Dialogue Skills: maternal dialogue skills; C-Engagement: child social engagement; D-Reciprocity: dyadic reciprocity.

p* < .05, *p* < .01.

Categorical changes in children's diagnoses

Table 4 lists the infancy DC: 0-3R diagnoses (and their frequency) that were given to the children from the treated group during infancy and their childhood psychiatric status. As the table indicates, the most frequent infancy diagnosis was sleeping disorder, followed by feeding, anxiety, and disruptive behavior disorders. Feeding, sleeping, and adjustment diagnoses appear to be transient, whereas ODD, pervasive developmental disorder (PDD), regulatory disorder, and RAD seem to be more persistent. Twenty-one children received Axis II relational diagnoses of varying severity. Of these, close to half (43%) were symptomatic during the late-childhood assessment, with many meeting criteria for attention deficit-hyperactivity disorder (ADHD) and ODD, as well as anxiety-related disorders.

Discussion

Our study compared the psychosocial and psychiatric functioning of a group of Israeli school-aged children who had been referred and treated as infants in an IMH clinic with a matched group of children who had never been referred nor treated, 6–8 years following the completion of the parent–infant intervention. Overall, the results revealed no differences between the early treated and non-treated groups in terms of rate of psychiatric diagnosis, child's socioemotional

Table 4. Past and present psychiatric diagnoses in the treated group.

Infancy diagnosis (DC: 0-3R or DSM-IV-R)	Late-childhood diagnosis (DSM-IV-R)
Sleep disorder (<i>n</i> = 4)	No diagnosis (<i>n</i> = 3) ADHD and Disruptive Behavior Disorder (<i>n</i> = 1)
Feeding disorder (<i>n</i> = 3)	No diagnosis (<i>n</i> = 1) ADHD (<i>n</i> = 1) Anxiety disorder NOS (<i>n</i> = 1)
Anxiety disorder (<i>n</i> = 3)	Fears and phobias (<i>n</i> = 1)
ODD (<i>n</i> = 3)	ADHD (<i>n</i> = 1) ADHD and ODD (<i>n</i> = 2)
Suspected PDD (<i>n</i> = 2)	Phobia disorder (<i>n</i> = 2)
Regulatory disorder (<i>n</i> = 2)	ADHD (<i>n</i> = 1), ODD (<i>n</i> = 1)
Adjustment disorder (<i>n</i> = 1)	No diagnosis (<i>n</i> = 1)
RAD (<i>n</i> = 1)	ADHD and ODD and separation anxiety disorder (<i>n</i> = 1)
DC: 0-3R relational disorder (<i>n</i> = 21)	No diagnosis (<i>n</i> = 8) ADHD, ODD (<i>n</i> = 7) Anxiety-related disorders (<i>n</i> = 6)

DC: 0-3R: Diagnostic Classification of Mental Health Disorders of Infancy and Early Childhood; ADHD: attention deficit-hyperactivity disorder; ODD: oppositional defiant disorder; PDD: pervasive developmental disorder; RAD: reactive attachment disorder; NOS: not otherwise specified.

adaptation, maternal psychopathology and stress, family functioning, and observed mother-child relational patterns during the late-childhood assessment. Mothers of school-aged children who met criteria for a psychiatric diagnosis during the late-childhood assessment, regardless of early treatment history (treated or non-treated group status), reported more parental stress and poorer family functioning than mothers of children with no diagnosis. There was also an interactive effect of treatment history \times current psychiatric diagnosis on parental stress, so that mothers of children treated during infancy who also met criteria for a psychiatric diagnosis during the late-childhood assessment, thus exhibiting continued psychopathology, reported the most maternal stress. Finally, focusing exclusively on the early intervention group, mothers of children who continued to show psychopathology during the late assessment reported greater parental stress and psychological distress. The interactions between them and their children involved less child engagement and poorer maternal dialogue skills.

Several themes emerged from these findings. First, the findings suggest, albeit tentatively, that early child emotional and/or behavioral symptoms are not necessarily linked to later psychopathology. Likewise, absence of early socioemotional symptoms does not protect against subsequent psychopathology. Second, the findings suggest that high levels of maternal stress and dysfunctional family relationships are associated with the continuity of early symptomatology into mid-childhood. Furthermore, within the early treated group, parental stress and psychological distress characterized the children who showed continued psychopathology. These findings are consistent with previous research that similarly documented the negative effect of parental stress and distress on parenting and the child's socioemotional adaptation over time (Dubois-Comtois et al., 2013; Fihrer et al., 2009). The findings can also be interpreted in light of the transactional model that sees children's socioemotional difficulties as reflecting longitudinal, reciprocal transactions between them and their social environment (Gross et al., 2009). Based on this model, we can regard our findings as reflecting the interplay between the child's input (i.e., early symptomatology) and the environmental input (i.e., parental stress, psychological distress, and negative family atmosphere), which together increase the risk of continued child psychopathology over time. The findings are

also in line with Mackler and her colleagues' (2015) recent report that documented longitudinal transactional associations between children's externalizing behaviors and parental stress, arguing that children's behavior problems tax parents, leading to elevated parental stress, which, in turn, compromises parenting. The authors further speculated, albeit tentatively because their study did not include observations, that parental stress might spill over, affecting the children's behavior via an emotional atmosphere of irritability and negativity. They concluded that parental stress should be the focus of interventions, which is also consistent with our findings of continued parental stress as linked to continued psychopathology.

A relatively significant rate (43%) of the children who were referred for treatment as infants and whose families participated in the parent–infant intervention were asymptomatic during the late-childhood assessment. Furthermore, null group-level differences were found between the treated and non-treated groups on the various child measurements during the late-childhood assessment. Finally, when comparing the well-functioning, previously treated children with other children whose symptoms appeared to persist, we saw group differences in maternal stress and distress, children's social engagement, and maternal dialogue skills, all favoring the group outgrowing psychopathology. Taken together, and relying on previous documentation regarding the effectiveness of parent–infant interventions (Bakermans-Kranenburg et al., 2005; Huber et al., 2016), we maintain, albeit tentatively (given that the study's design was not intended to assess the treatment's effectiveness) that early parent–infant intervention can help dampen the impact of developmental hindrances. Such interventions possibly reduce parental stress and strengthen the parents' ability to cope better with developmental challenges, thus protecting them and their children from continued and expanding psychopathology.

Furthermore, our findings show that favorable dyadic relational patterns are linked with the discontinuity of psychopathology. These findings are in line with attachment theory's perspective that early parent–child interactions shape the brain structures and mental schemas that guide adaptation throughout life (Carter et al., 2005). The findings are also consistent with previous research demonstrating the protective aspect of shared pleasurable parent–child interactions. Such interactions can mitigate risk conditions such as parental psychopathology (Mäntymaa et al., 2015), possibly by altering the bio-behavioral regulatory system in both the child and the parent, thus leading potentially to positive changes in affect regulation, impulse control, self-monitoring, and self-agency (Steele et al., 2015). All of these factors are linked with favorable child adaptation.

Finally, we examined the stability of specific DC 0-3R diagnostic categories. Sleeping and eating diagnoses were most common but they did not persist into late childhood. Keeping in mind the small sample size, this finding tentatively suggests that these diagnoses are often transient and may require relatively short-term interventions. This conclusion is consistent with studies reporting that infant crying (Hjern et al., 2020) and sleeping difficulties (Paavonen et al., 2020) resolved over time but are different from others arguing that early sleep difficulties are linked with later child psychopathology (Cook et al., 2020; Huhdanpää et al., 2019). Furthermore, our findings indicate that early ODD and regulatory disorders appear to persist. This result is consistent with current empirical and clinical data regarding ADHD, suggesting that high levels of inattention, hyperactivity, and impulsivity may interfere with the functioning of young children and their family and may put them at risk for continued divergence from normal development and adaptation (Ben-Sasson et al., 2014). Furthermore, in our study, DC: 0-3R relational disorders appear to be relatively chronic and linked to later ADHD and ODD, as well as anxiety-related disorders. This pattern is consistent with Mothander's (2016) commentary about the importance of identifying and treating relational disorders during infancy because it poses a great risk for children's adaptation. The pattern is also consistent with current DC: 0-5 formulations in which ODD is viewed as a resistant, hard-to-treat condition,

which is linked to a continuation of disturbances in the parent–child relationship. Finally, RAD was present in only one case, but appeared to be stable, as expected, based on the well-known implications of severe deprivation in early years. Taken together, the findings suggest that the continuity of psychopathology also depends on the kind of difficulty the infant presents.

The current study is, to the best of our knowledge, one of only a few studies comparing the socioemotional functioning and family context of children who had been referred and treated during infancy with a non-treated group, 6–8 years following the treated group's early intervention. As such, it is unique in its sample, design, and research questions. However, several caveats need to be acknowledged when interpreting our findings. Among them are the small sample size and the shortage of prospective longitudinal information regarding the comparison group. Furthermore, despite having recruited a matched comparison group from the same catchment area and with similar demographic characteristics, the two groups differed in mothers' work status, with mothers of early treated children being less likely to be working full time. This distinction may have contributed to greater maternal stress and consequently to the children's maladjustment. Moreover, in our study, mothers were the main source of information regarding the child and the family. This fact has two potential drawbacks. First, researchers have cautioned against relying exclusively on maternal reports, especially in cases of maternal depression (Ordway, 2011), stress (Dubois-Comtois et al., 2013) or abuse (Lau et al., 2006). These mothers often have a distorted, negative view of their children's behavior and development, which might result in overestimation of the children's difficulties. We believe that the fact that we utilized two structured assessments and observer and independently coded mother–child interactions in addition to mothers' self-reported questionnaires partially compensates for this risk. Second, recruiting mothers and not fathers for research of this kind is common and often justified as leading to better research adherence (Goldstein et al., 2020). However, it also limits our understanding of the fathers' subjective experiences and their contribution to the child's continued versus discontinued psychopathology. Longitudinal studies that follow families from the time of referral throughout the intervention and include comprehensive post-intervention and follow-up assessments with multiple informants are needed along with a protocol for recruiting comparison families.

Conclusions and clinical implications

The major clinical implication of our findings relates to the need for the early identification of parents who experience greater stress and psychological distress, both related and unrelated to the infant's functional and behavioral symptoms, and refer them for parent–infant intervention. The findings also suggest that some families may need continued treatment beyond infancy. Relatedly, the findings highlight the need for longitudinal follow-ups that involve both the parents and the child, as some children and families may develop recurring difficulties. Finally, intervening early on, through universal, targeted, or indicated programs, is likely to be less costly and more beneficial to the individual family as well as to the community at large (Barlow & Svanberg, 2009).

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of Geha Mental Health Center and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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