ARTICLE

A LONG-TERM FOLLOW-UP STUDY OF A RANDOMIZED CONTROLLED TRIAL OF MOTHER–INFANT PSYCHOANALYTIC TREATMENT: OUTCOMES ON MOTHERS AND INTERACTIONS

MAJLIS WINBERG SALOMONSSON, KIMMO SORJONEN, AND BJÖRN SALOMONSSON
Karolinska Institutet

ABSTRACT: An earlier randomized controlled trial (RCT) compared 80 mother–infant dyads in a Stockholm sample. One had received mother–infant psychoanalytic treatment [mother–infant psychoanalytic therapies (MIP) group], and the other received Child Health Center care (CHCC group). Effects were found on mother-reported depression and expert-rated mother–infant relationship qualities and maternal sensitivity. When the children were $4\frac{1}{2}$ years, the dyads were followed up with assessments of the children's attachment representations, social and emotional development, and global functioning, and the mothers' psychological well-being and representations of the child as well as the mother–child interactions. We gathered data from 66 cases approximately $3\frac{1}{2}$ years' posttreatment. All scores involving the mothers had now approached community levels. We found effects on maternal depression in favor of MIP, but no other between-group differences. The MIP treatments seemed to have helped the mothers to recover more quickly on personal well-being, to become more sensitive to their babies' suffering, and to better support and appreciate their children throughout infancy and toddlerhood. If so, this would explain why the MIP children had a better global functioning and were more often "OK" and less often "Troubled" at $4\frac{1}{2}$ years.

Keywords: mother–infant psychotherapy, randomized controlled trial, Emotional Availability Scales, Working Model of the Child Interview

RESUMEN: **Trasfondo**: Un experimento anterior controlado al azar (RCT) comparó 80 díadas de madre-infante en un grupo muestra de Estocolmo. Uno había recibido tratamiento sicoanalítico de madre-infante (el grupo "MIP") y el otro Cuidado en el Centro de Salud para el Niño (el grupo "CHCC"). Los efectos se encontraron en la depresión reportada por las madres y en las cualidades y sensibilidad materna de la relación madre-infante evaluada por un experto.

Método: Cuando los niños tenían cuatro años y medio, a las díadas se les dio seguimiento con evaluaciones de las representaciones de afectividad de los niños, el desarrollo social y emocional, y el funcionamiento global, y el bienestar de las madres y sus representaciones del niño, así como las interacciones entre madre y niño.

Resultados: Recogimos información de 66 casos aproximadamente tres años y medio después del tratamiento. Todos los puntajes concernientes a las madres habían para entonces alcanzado niveles comunitarios. Encontramos efectos sobre la depresión materna a favor de MIP pero ninguna otra diferencia entre grupos. Los tratamientos de MIP parecían haber ayudado a las madres a recobrarse más rápidamente en cuanto a su bienestar personal, a ser más sensibles con el sufrimiento de sus bebés y a apoyar mejor y apreciar a sus niños a través de toda la infancia y la pequeña niñez. Por tanto, esto explicaría por qué los niños MIP tenían un mejor funcionamiento global y estuvieron más a menudo "OK" y menos frecuentemente "turbados" a los cuatro años y medio.

Palabras claves: sicoterapia de madre-infante, RCT, EAS, WMCI

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Direct correspondence to: Majlis Winberg Salomonsson, Child and Adolescent Psychiatric Unit, Department of Women's and Children's Health, Karolinska Institutet, SE-171 76 Stockholm, Sweden; e-mail: majlis.winberg-salomonsson@ki.se.

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RÉSUMÉ: **Contexte**: Une étude clinique randomisée contrôlée précédente a comparé 80 dyades mères-bébé dans un échantillon de Stockholm. Le premier groupe a reçu un traitement psychanalytique mère-bébé (groupe "MIP") et l'autre groupe a été assigné au Child Health Center Care (le groupe "CHCC"). Les effets ont été trouvés sur la dépression rapportée par les mères et les qualités de relation établies par des experts ainsi que les qualités de la sensibilité maternelle.
Méthode: Lorsque les enfants ont atteint l'âge de 4 ans et demi, les dyades ont fait l'objet d'un suivi avec des évaluations des représentations de l'attachement des enfants, du développement social et émotionnel, et du fonctionnement global, ainsi que le bien-être psychologique des mères et leurs représentations de l'enfant, tout comme les interactions mères-enfant.
Résultats: Nous avons recueilli des données de 66 cas à à peu près 3 ans et demi après le traitement. Tous les scores concernant les mères avaient désormais approché les niveaux communautaires. Nous avons trouvé des effets sur la dépression maternelle en faveur du groupe MIP mais aucune autre différence entre les deux groupes. Les traitements MIP ont semblé avoir aidé les mères à récupérer plus vite pour ce qui concerne le bien-être personnel et à devenir plus sensibles à la souffrance des bébés ainsi qu'à mieux soutenir et apprécier leurs enfants à travers la très petite et la petite enfance. Si c'est le cas, cela expliquerait pourquoi les enfants du groupe MIP avaient un meilleur fonctionnement global, allaient bien et avaient moins de problèmes à 4 ans et demi.

Mots clés: Psychothérapie mère-nourrisson, étude clinique randomisée contrôlée, EAS, WMCI

ZUSAMMENFASSUNG: **Hintergrund**: Eine frühere randomisierte kontrollierte Studie (RCT) verglich 80 Mutter-Kind-Dyaden einer Stichprobe aus Stockholm. Eine Gruppe erhielt eine psychoanalytische Mutter-Kind-Behandlung (die "MIP" Gruppe) und die andere Gruppe erhielt eine Behandlung des Kindergesundheitszentrums (die "CHCC" Gruppe). Es wurden Effekte auf die von den Müttern berichtete Depression und von Experten bewertete Mutter-Kind-Beziehungsqualität sowie mütterliche Feinfühligkeit gefunden.
Methode: Als die Kinder 4½ Jahre alt waren, wurden die Dyaden erneut untersucht. Hierbei erfolgte die Erfassung der Bindungsrepräsentationen der Kinder, der sozialen und emotionalen Entwicklung und des globalen Funktionsniveaus, des psychischen Wohlbefindens der Mütter und Repräsentationen bezüglich des Kindes sowie der Mutter -Kind-Interaktionen.
Ergebnisse: Wir sammelten ca. 3 ½ Jahre nach der Behandlung Daten von 66 Fällen. Alle Ergebnisse unter Einbeziehung der Mütter hatten sich dem Level der Allgemeinheit angenähert. Wir haben Auswirkungen auf die mütterliche Depression zugunsten der MIP gefunden, jedoch keine anderen Unterschiede zwischen den Gruppen. Die MIP-Behandlungen schien den Müttern geholfen zu haben, persönliches Wohlbefinden schneller wiederherzustellen, einfühlsamer auf das Unwohlsein ihrer Babys einzugehen, eine bessere Unterstützung darzustellen und ihre Kinder im Säuglings- und Kleinkindalter wertzuschätzen. Wenn dem so ist, würde dies erklären, warum die MIP-Kinder ein besseres globales Funktionsniveau hatten und mit 4 ½ Jahren häufiger als "ok" und weniger oft als "troubled" klassifiziert wurden.

Keywords: Mutter-Kind-Psychotherapie, RCT, EAS, WMCI

抄録: 背景:以前のランダム化対照試験(RCT)では、ストックホルムサンプルの80組の母親と乳児を比較した。一方は母親乳児精神分析的治療(「MIP」群)を受け、他方は児童保健センターケアChild Health Center Care (「CHCC」群)を受けた。効果は母親が報告した抑うつと、専門家が評価した母親と乳児の関係性の質と母親の感受性に見られた。方法:子どもが4歳半の時、母子はフォローアップされた。そのときには子どもの愛着表象、社会性と情緒の発達、および全般的機能と、母親の心理的な幸福well-beingおよび子どもの表象に加え、母親と子どもの相互交流が調べられた。結果:私たちは治療のおよそ3年半後の66組からデータを集めた。母親に関わるすべての評価点は、今や地域社会レベルに達していた。私たちは母性抑うつへの効果に関してMIPに有利だったことを認めたが、それ以外では2群間に違いが見られなかった。MIP治療は、母親たちが個人的な幸福well-beingにおいてより素早く回復すること、赤ちゃんの苦痛に対してより敏感になること、そして乳幼児期を通して子どもをより良く支持し評価することを助けたように思えた。もしそうだとしたら、これがMIPの子どもが4歳半の時点で、より良い全般的な機能を持ち、しばしば「OK」であり「問題がある」ことがより少なかったのはなぜかを説明するだろう。

キーワード: 母親–乳児精神療法 `, RCTランダム化対照試験 `, EAS `, WMCI子どもの作業モデル面接

摘要: 背景:一個較早的隨機對照試驗(RCT)比較在斯德哥爾摩80個母嬰二人組合的樣本。一個組別曾接受母嬰精神分析治療(以下簡稱"MIP"組), 另一個組別曾接受其他兒童保健中心看護(以下簡稱"CHCC"組)。組別被發現影響母親報導抑鬱症狀和專家級評估母嬰關係的質量及母親的敏感性。 方法:在孩子四歲半時母嬰二人組合接受隨訪去評量孩子的依附表徵, 社會及情緒發展, 和整體功能, 亦評量母親的心理健康, 孩子表徵, 以及母兒互動。結果:我們大約在治療三年半後從66個案中收集數據。所有涉及母親的分數那時已經接近社區水平。我們發現MIP對母親抑鬱症有幫助, 但沒有其他組別間的差異。MIP治療似乎能幫助母親較快地恢復個人幸福感, 令他們對嬰兒的痛苦較敏感, 並令母親在嬰兒期和學步期間能更支援及珍惜他們的兒女。如果是這樣, 這可以解釋為什麼在四歲半時MIP組的孩子有較好的整體功能, 並常是"無問題", 較少是"有問題"。

關鍵詞: 母嬰心理治療, RCT, EAS, WMCI

ملخص: خلفية: قامت دراسة سابقة بمقارنة 80 ثنائى أم ورضيع فى عينة فى استكهولم . أحد المجموعات تلقت علاج نفسى (MIP) والأخرى تلقت رعاية مركز صحة الطفل (CHCC) . وظهرت نتائج ذلك من خلال تقارير اكتئاب الأمهات ونوعيات العلاقة بين الأم والرضيع والحساسية الأمومية . التجربة : عندما وصل الأطفال عمر أربع سنوات ونصف تم تتبع العينات بالتقييم لتصورات التعلق لدى الأطفال والنمو الاجتماعى والعاطفى والأداء العام والصحة النفسية للأم وتصورات الطفل وكذلك التواصل بين الأم والطفل . النتائج : تم تجميع بيانات من 66 حالة بعد تقريبا ثلاث سنوات ونصف من التجربة فوجد أن جميع المؤشرات الخاصة بالأمهات قد وصلت إلى المعدل المجتمعى . وتبين وجود آثار على الاكتئاب الأمومى خاصة بالنسبة للمجموعة التى تلقت علاجا نفسيا حيث أن هذا العلاج يبدو أنه قد ساعد الأمهات على الاستشفاء سريعا من حيث الصحة النفسية وأن يصبحوا أكثر حساسية لمعاناة أطفالهم وأكثر قدرة على دعم وتقدير أطفالهم خلال فترة الرضاعة والحبو . وفى هذه الحالة نستطيع تفسير كيف أن الأطفال فى مجموعة العلاج النفسى كان لديهم كفاءة عامة أفضل وكانوا غالبا على ما يرام وأقل اضطرابا فى سن أربع سنوات ونصف .

كلمات مفتاحية : *العلاج النفسى لثنائيات الأم والطفل – تجربة عشوائية - RCT, EAS, WMCI.*

* * *

Several studies have shown that mental disorders are common during pregnancy and the postnatal period (O'Hara, Stuart, Gorman, & Wenzel, 2000). The mother's distress can lead to great suffering both for her and her infant, and also influence the mother–child relationship (Howard et al., 2014). So far, research has largely focused on depression. A review of longitudinal studies (Vliegen, Casalin, & Luyten, 2014) reported that as much as 30% of postpartum-affected mothers remained depressed throughout and beyond the first postnatal year.

It is of great importance to find efficient and well-validated treatments of the mother's distress and her infant's development. Due to the often protracted course of maternal depression, it is even more important to develop and validate treatments that have a long-term effect.

The paradigm of randomized controlled trial (RCT) is often considered to be the most reliable way of investigating the efficacy of a treatment mode. Accordingly, many RCTs investigating psychotherapies of postpartum depression have been performed. However, as Dennis (2004) maintained in a meta-analysis, it is often difficult to draw definitive conclusions from the results due to design limitations. In Singleton's (2005) meta-analysis of parent–infant interventions, only 60% of the studies were estimated as being of high or moderate methodological quality. Two more recent reviews (Cuijpers, Weitz, Karyotaki, Garber, & Andersson, 2015; Werner, Miller, Osborne, Kuzava, & Monk, 2015) re-emphasized the lack of well-designed investigations. In the RCTs studied, psychotherapy seemed to decrease levels of depression in depressed mothers and also have a positive effect on the mental health of their children (Cuijpers et al., 2015). Interpersonal therapy trials seemed to hold the most promise for further study (Werner et al., 2015). In contrast, Singleton's meta-analysis showed that interventions using the psychodynamic model consistently had large effect sizes.

One important methodological problem in RCTs of parent–infant psychotherapy is the brief follow-up periods. Most studies have used follow-up periods from zero to 12 months' posttreatment (Clark, Tluczek, & Wenzel, 2003; Cohen, Lojkasek, Muir, Muir, & Parker, 2002; Cohen et al., 1999; Hayes & Matthews, 2008; Letourneau & Stewart, 2011; Lieberman, Weston, & Pawl, 1991; Mulcahy, Reay, Wilkinson, & Owen, 2010; O'Hara et al., 2000; Ravn et al., 2012; Robert-Tissot et al., 1996; Santelices & Guzmán, 2011).

To our knowledge, only one study with a lengthy follow-up of mother and child has been conducted. Cooper, Murray, Wilson, and Romaniuk (2003) and Murray, Cooper, Wilson, and Romaniuk (2003) investigated the long-term effects of therapy with depressed mothers and their infants. All mothers were randomized to one of three active, 10-week therapies or to routine primary care. The active treatment groups lowered their depression scores immediately posttreatment. By 9 months' postpartum, the positive effects of the treatments were no longer apparent, and at follow-ups at child ages up to 5 years, there were no differences between groups.

The present article and a parallel one on the children's outcomes (M.W. Salomonsson, Sorjonen, & Salomonsson, 2014) investigate the long-term effects on a Swedish sample of mother–infant emotional problems. These two articles follow up on an RCT, here called the infant study (B. Salomonsson & Sandell, 2011a, 2011b) of mother–infant psychoanalytic therapies (MIP; Norman, 2001) compared with Swedish standard Child Health Center Care (CHCC). We will first describe this infant study and then present the results of our follow-up investigation. For a summary of the design of the infant and the follow-up studies, please refer to Figure 1.

THE INFANT STUDY

The study was performed from 2005 to 2008 with mothers and infants below $1\frac{1}{2}$ years of age. They were recruited from Child Health Centers, a delivery ward, and advertisements on parenting Internet sites. Inclusion criteria were that the mothers had expressed "baby worries;" that is, concerns about their role as mothers, their infants' well-being, or the mother–baby relationship. The babies displayed problems with sleep, breastfeeding, weaning, affect regulation, anxiety, and attachment. The mothers were depressed, anxious, or ambivalent about motherhood. The problems should have lasted more than 2 weeks, and the families should live in the Stockholm area and speak Swedish well enough to participate in treatments. Mothers with psychosis and substance abuse were excluded if their conditions might preclude cooperation

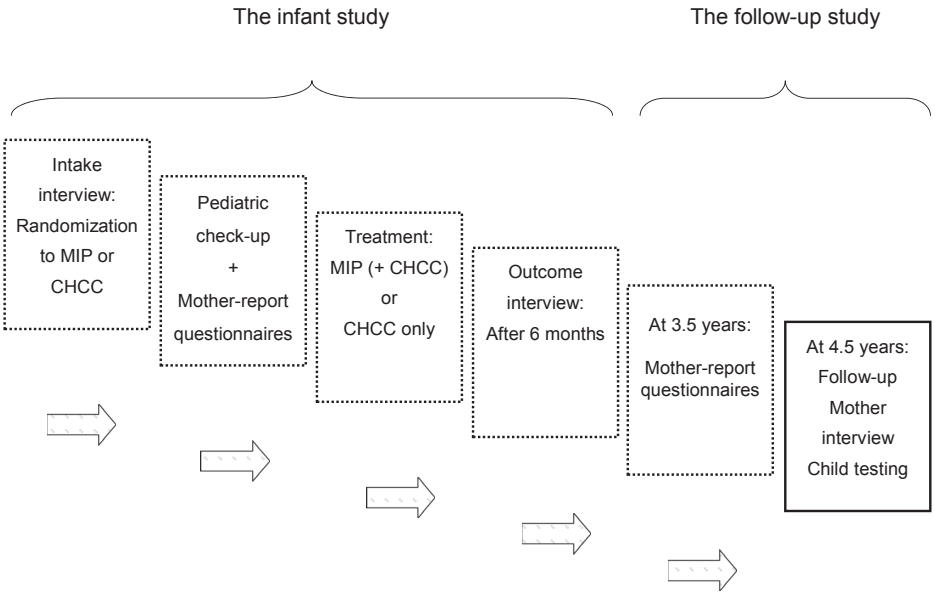

FIGURE 1. Design of the infant and the follow-up studies.

with the project. Eighty dyads were seen in a video-recorded interview, at the end of which they were randomized to the MIP or the CHCC group. Assessments were made at intake and 6 months later of mother-reported depression, stress, general psychological distress and infant functional problems, interviewer-assessed relationship qualities, and externally rated interactions. It was possible to perform intent-to-treat analyses on 75 cases; 38 in the MIP group and 37 in the CHCC group.

The mothers constituted a sample with a low social risk, but a medium psychiatric risk. The prevalence of anxiety, depression, and eating disorders during childhood or adulthood was more than 50%. Somatic illnesses such as multiple sclerosis, diabetes, epilepsy, and ulcerative colitis affected more than 10%.

All MIP cases were treated by psychoanalysts of the Mother-Infant Psychoanalysis Project in Stockholm. The method has been described elsewhere (Norman, 2001, 2004; B. Salomonsson, 2007, 2011, 2014). In brief, sessions take place with infant and mother together. Frequency and treatment duration are adapted to the pathology of mother and child and to the mother's motivation and possibilities of continuing therapy. In general, a high frequency is preferred. The psychoanalyst focuses on the mother–infant interaction and on the baby's efforts at communicating with him or her. Interventions utilize the baby's ability to process their emotional impact even though she or he does not understand their lexical meanings. The mother is given opportunities of venting her distress and working with her "ghosts in the nursery" (Fraiberg, Adelson, & Shapiro, 1975), "negative attributions" (Silverman & Lieberman, 1999), and "projective distortions" (Cramer & Palacio Espasa, 1993). It is important to also address the mother's low self-esteem and guilt feelings.

In the alternative standard treatment mode, Swedish CHCC, regular nurse calls range from weekly to bimonthly checkups during the first year. Later, they are stretched out to checkups at $1\frac{1}{2}$, 3, 4, and 5 years. They comprise weighing and measuring the child, providing inoculations, nutritional advice, and pediatric visits. In addition, the nurse's guidance (Lojkasek, Cohen, & Muir, 1994) on the child's physical, psychological, and social development implies that she or he observes and discusses with the mother any worries about the baby. The nurse also seeks to promote a secure attachment and to detect depression, often by using a mother-report questionnaire.

INSTRUMENTS

Maternal distress. Three self-report questionnaires were used; the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987), the Swedish Parental Stress Questionnaire (SPSQ; Östberg, Hagekull, & Wettergren, 1997), and the Symptom Checklist-90 on general psychological distress (SCL-90; Derogatis, 1994; Fridell, Cesarec, Johansson, & Malling Thorsen, 2002). The EPDS has been validated on Swedish samples (Wickberg & Hwang, 1997); it has 10 items, each rated on a scale of 0 (most of the time) to 3 (never). The SPSQ is a Swedish modified version of the Parenting Stress Index (Abidin, 1990), with 34 items rated on scale of 1 (completely agree) to 5 (do not agree at all). In the SCL-90, 90 items on a scale of 0 (not at all) to 4 (very much) are subsumed into a mean score, the General Severity Index (GSI).

Infant distress. We used a Swedish translation of a mother-report instrument, the Ages & Stages Questionnaire: Social-Emotional (ASQ:SE; Squires, Bricker, Heo, & Twombly, 2002). It is designed to identify developmental problems in children up to 5 years of age.

Each item is rated on a scale of 0 () to 2 (), and the mother also can indicate if the symptom causes her any concern. Since there are three versions for our age range, we used mean scores for each questionnaire to enable comparisons.

Mother–infant relationship. The interviewer used the Parent–Infant Relationship Global Assessment Scale (PIR-GAS; ZERO TO THREE, 2005). To check interrater reliability, an independent clinician rated 20 pre- and posttreatment interviews.

Mother–infant interaction. Ten-minute video recordings were assessed by two independent clinicians using the third edition of the Emotional Availability Scales (EAS; Biringen, Robinson, & Emde, 1998). The dimensions are maternal sensitivity, structuring, nonintrusiveness, and nonhostility, plus infant responsiveness and involvement. To enable comparisons, each raw score was divided by the range of its dimension. Nonhostility was omitted due to low interrater reliability.

The median length of the MIP therapies was 23 sessions, two or three times a week. One third of the CHCC dyads had received extra treatments such as brief individual or marital psychotherapy or antidepressant medication. The results favored MIP on maternal depression, mother–infant relationships, maternal sensitivity, and, on a marginally significant level, maternal stress. Effect sizes were small to moderate when measured by Cohen's *d* whereas Becker's δ (Becker, 1988) was somewhat higher.

THE PRESENT STUDY

Aims and Hypotheses

The aim was to compare the long-term efficacy of MIP and CHCC. While the initial mother–infant interviews were carried out at a varying child age from 1 to 14 months, the follow-up study was performed at the same age points for every child; $3\frac{1}{2}$ and $4\frac{1}{2}$ years. A previous article has reported on the child outcomes (M.W. Salomonsson et al., 2014). We hypothesized that the MIP mothers were to demonstrate more favorable results on depression, stress, and general psychological distress as well as on internal representations of the children. We also assumed that their interactions with their children would be more optimal.

METHOD

Participants

Of the 75 cases analyzed in the infant study, 71 appeared for the outcome interview 6 months after intake. They were asked to complete questionnaires at a child age of $3\frac{1}{2}$ years and bring the child for an assessment interview at $4\frac{1}{2}$ years. Everyone consented, but at the time of the $3\frac{1}{2}$-year-questionnaires, 3 mothers (1 in the MIP group, 2 in the CHCC group) declined further participation. Of the remaining 68 mothers, 1 in each group declined participation in the $4\frac{1}{2}$-year interviews. Among the remaining 66 mothers, 6 provided incomplete data; and 3 had just delivered a baby and declined the interview, but completed the questionnaires. One mother from each group arrived with her child, but without questionnaires. Despite reminders, they never returned them. Finally, 1 mother did not want her child to be interviewed but consented to being interviewed herself. In summary, at the $4\frac{1}{2}$-year follow-up, we gathered complete or partial data from 66 cases, 33 from each group, of the 80 cases originally randomized in the infant study, for a response rate of 82.5%. Figure 2 illustrates the participants, including the dropout cases.

Interview Procedure

All interviews were video recorded. One author (B.S.), an experienced psychiatrist who had interviewed all participants in the infant study, again interviewed the mothers. Another author (M.W.S.), an experienced child psychologist, interviewed the child. The interviews started with a joint welcoming, whereupon mother and child were separated into two adjacent rooms with video cameras. The first part of the mother-interview investigated her internal representations of the child and their relationship. Meanwhile, M.W.S. tested the child. At the end of the first part of the interview, the child received a Lego toy with instructions to assemble it with his or her mother. Mother and child were then reunited. After 12 min, they were served cookies and lemonade; this snack lasted another 8 min. They were then separated once again. The mother was asked by B.S. about major life events since the time of the infant study. Standardized questions also were asked about the child's daily functioning. Finally, the mother handed B.S. the questionnaires. She was asked if she consented to requesting the preschool teacher to fill in a questionnaire on the child's functioning. Meanwhile, the child was further assessed by M.W.S. Thereafter, mother and child reunited, and there was a joint farewell.

Measurements: Children

The child's socioemotional functioning was assessed from mother- and teacher-questionnaires, interviewer impressions, and external assessments. Mothers completed the ASQ:SE. The mothers as well as the teachers completed the Strengths and Difficulties Questionnaire (Goodman, 1997, 2001) in its Swedish version (Smedje, Broman, Hetta, & von Knorring, 1999); this is a screening instrument for prosocial behavior and psychopathology in children aged 3 to 16 years. The Machover Draw a Person Test (Machover, 1949, 1951) was used to assess the age adequacy of the child's drawing and the regulation of emotions expressed in the drawing. The Story Stem Assessment Profile (Hodges, Steele, Hillman, Henderson, & Kaniuk, 2003) was used to assess the child's attachment representations. The global level of functioning was rated through the Children's Global Assessment Scale (CGAS; Shaffer et al., 1983). We used the Ideal type method (Wachholz & Stuhr, 1999) to categorize the child's characteristics and psychological well-being. After careful observations of each child, the interviewer formed categories through a process of induction (Philips, Werbart, Wennberg,

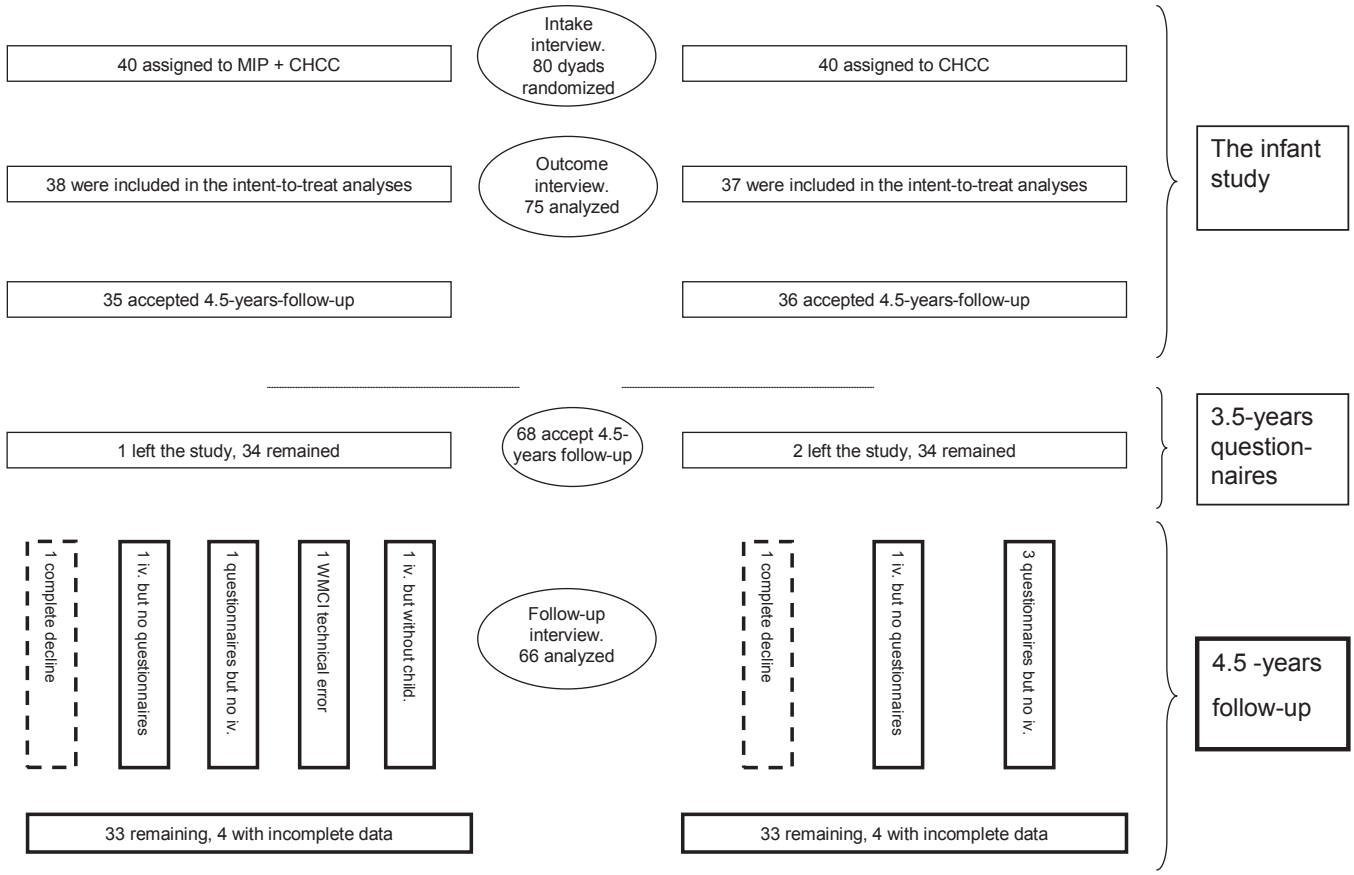

FIGURE 2. Flowchart of the infant and the follow-up studies.

& Schubert, 2007; Wachholz & Stuhr, 1999) into two major categories: "OK" and "Troubled." Cognitive functioning was rated with the Wechsler preschool and primary scale of intelligence-III (WPPSI-III; Wechsler, 2002, 2005). For a detailed account, refer to the report on the children (M.W.Salomonsson et al., 2014).

Measurements: Mothers

Major life events. The mother was asked about major life events since the time of the infant study, such as divorce, birth of new siblings, unemployment, and psychiatric or somatic disorders and treatments of mother, father, or child.

Maternal representations of the child. The Working Model of the Child Interview (WMCI; Zeanah, Benoit, & Barton, 1986) was used. The semistructured, 1-hr, videotaped and transcribed interviews were done by B.S. An external, uninformed child psychologist, who had been trained and certified in the method, classified maternal representations into *balanced*, *disengaged*, or *distorted*. In a balanced representation, the parent is genuinely interested in the child and appreciates his or her "subjective experiences, and values the relationship with the child and the child's individuality" (Vreeswijk, Maas, & van Bakel, 2012, p. 315). Disengaged representations are marked by indifference, emotional distance, impoverished content, and intellectualization. Distorted representations are marked by age-inappropriate expectations, insensitivity, and often a predominance of negative

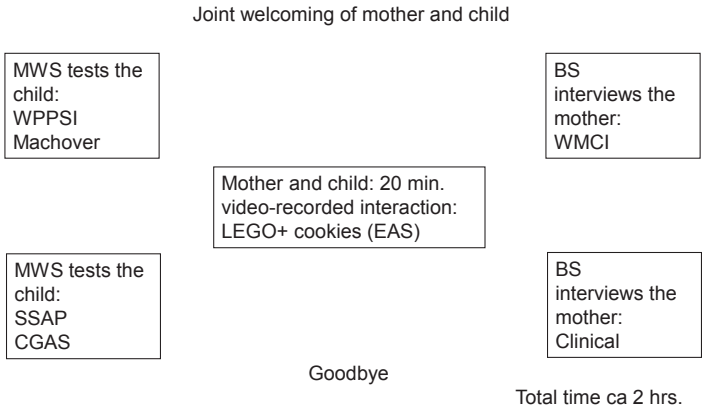

FIGURE 3. The interview procedure.
BS = last author, CGAS = Children's Global Assessment Scale, EAS = Emotional Availability Scales, MWS = first author, SSAP = Story Stem Assessment Profile, WMCI = Working Model of the Child Interview, WPPSI = Wechsler preschool and primary scale of intelligence.

and/or idealized representations with negative and/or discrepant or ambivalent emotions, parental self-focus, and lack of narrative coherence.

The interviewer asks parents, through a number of preformulated questions, about "their impressions of their children's personalities and behavior in general and specific situations" (Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994, p. 12). A study by Zeanah et al. (1994) showed that the WMCI categories were related to the infants' attachment classifications of secure, avoidant, and resistant, respectively. Associations also have been found between balanced representations and optimal dyadic interactions (Korja et al., 2010) and between nonbalanced representations and failure to thrive (Coolbear & Benoit, 1999). The WMCI representations also are associated with infant affect regulation (Rosenblum, McDonough, Muzik, Miller, & Sameroff, 2002), maternal depression (Minde, Tidmarsh, & Hughes, 2001; Wood, Hargreaves, & Marks, 2004), and reflective functioning (Schechter et al., 2005). It also has been used as an outcome instrument in parent–infant psychotherapy research (Schechter et al., 2006). The WMCI was developed in the United States and may be sensitive to cultural differences; however, the U.S. and Swedish cultures are rather similar. Although it was developed for parents with infants, it also has been used with caregivers of children of 4 to 5 years (Benoit, Zeanah, Parker, Nicholson, & Coolbear, 1997; Schechter et al., 2005).

In our statistical analyses, we collapsed the disengaged and distorted categories into "nonbalanced representation" (Zeanah et al., 1994) since in clinical samples, both of them "imply that parents react insensitively toward their infants" (Vreeswijk et al., 2012, p. 315). To check intercoder agreement, an external and certified child psychologist rated 15 interviews. Compared with the main rater, the external ratings differed on two cases, which yielded a Cohen's κ of .72.

Maternal psychological well-being. Mothers rated their depression, psychological distress, and stress through the EDPS, the SPSQ, and the SCL-90. Our values for α at $3\frac{1}{2}$ and $4\frac{1}{2}$ years were .83 and .87, respectively, for the EPDS; .89 and .91, respectively, for the SPSQ; and .97 and .97, respectively, for the SCL-90.

Measurements: Dyadic Interaction

The same instrument as in the infant study was used, but in the recent fourth edition of the EAS (Biringen, 2009). Two external and uninformed raters with substantial clinical child experience were certified by the constructor. One rater assessed all videos, and a second rater assessed one third of the sample to check interrater reliability. Their intraclass coefficients varied between .71 and .87. Similarly to the infant study, each raw score was divided by the range of its dimension, to enable comparisons across the three measurement points of the infant and follow-up studies. An equalized score of 0 is the most nonoptimal score, and 1 is the most optimal score.

TABLE 1. *Between-Group Comparisons at* $4\frac{1}{2}$ *Years for the 1-Point Measurements (*χ^2 *Test)*

Variable	MIP *n*	CHCC *n*	χ^2	*p*
Marital Discord or Divorce	9	10	0.198	.657
Psychotherapy, M	15	18	1.071	.301
Psychotropic Drugs, M	3	7	2.230	.135
New Somatic Illness, M	2	1	0.286	.593
New Somatic Illness, Child	0	3	3.363	.067
More Children in Family	20	12	2.721	.099
WMCI Balanced/Nonbalanced	19/12	19/11	0.027	.869

CHCC = Child Health Center Care; MIP = Mother–infant psychoanalysis; WMCI = Working Model of the Child Interview.

STATISTICS

SPSS Version 22.0 was used. Scores were considered to be univariate outliers if *z*-transformed scores exceeded 3.29, $p < .001$, two-tailed test (Tabachnik & Fidell, 2007). Three such scores were removed. Multivariate outliers were identified by calculating Mahalanobi's distance through a multiple regression analysis; no such cases were found. Missing data were very rare. Little's Missing Completely at Random Test on all outcome measures yielded $\chi^2 = 38.421$, $df = 30$, $p = .139$ (Tabachnik, Bb, G. et al., 2007). Data were thus missing at random, and no scores were imputed.

Outcomes on the EAS, the EPDS, the SPSQ, and the GSI of the SCL-90, the four variables with several measurement points, were analyzed with multilevel modeling (MLM). The size and significance of mediated effects were calculated with the Mplus 7.11 statistical software, using maximum likelihood with robust *SE*s estimation and the Model Indirect command (Muthén & Muthén, 1998–2012).

The intent-to-treat analysis utilized all cases from the infant study, including all dropouts up to $4\frac{1}{2}$ years of age (75 cases). One variable had only one measurement point: the WMCI. Here, we used χ^2 tests on the 61 mothers who were interviewed.

Ethical Approval

The project was approved by the Regional Ethical Review Board in Stockholm, Dnr 2009/1334-32. Mothers were told that they could leave the project at any time. Video recordings were made only with their consent. For details, please refer to the infant study (B. Salomonsson & Sandell, 2011a).

RESULTS

Major Life Events

As seen in Table 1, a series of χ^2 tests revealed no differences between the MIP group and the CHCC group on the prevalence of divorce, birth of new siblings, unemployment, and psychiatric or somatic disorders and treatments of mother or child. There were

TABLE 2. *Descriptive Statistics of Ms and SDs of Scores at All Measurement Points*

	MIP				CHCC			
Variable	Pre	Post	$3\frac{1}{2}$	$4\frac{1}{2}$	Pre	Post	$3\frac{1}{2}$	$4\frac{1}{2}$
EAS Sensitivity	.56 (.14)	.64 (.13)	–	.68 (.12)	.60 (.14)	.57 (.17)	–	.67 (.16)
EAS Structuring	.67 (.15)	.71 (12)	–	.66 (.12)	.71 (.14)	.68 (16)	–	.69 (.13)
EAS Nonintrusiveness	..82 (.16)	.78 (.16)	–	.82 (.12)	.78 (.20)	.73 (.23)	–	.81 (.14)
EAS Responsiveness	.60 (.18)	.70 (13)	–	.69 (.13)	.67 (.19)	.67 (.20)	–	.74 (.15)
EAS Involvement	.60 (.20)	.69 (14)	–	.67 (.13)	.64 (.22)	.66 (.19)	–	.72 (.16)
EPDS	12.29 (4.64)	6.28 (4.11)	6.56 (5.28)	5.47 (4.14)	11.44 (4.77)	7.99 (4.55)	7.35 (4.90)	7.03 (4.40)
SPSQ	3.01 (0.49)	2.67 (0.48)	2.75 (.0.48)	2.68 (0.58)	2.92 (0.60)	2.74 (0.54)	2.67 (0.68)	2.60 (0.55)
GSI	0.98 (0.61)	0.57 (0.45)	0.65 (0.55)	0.57 (0.47	0.96 (0.50)	0.68 (0.44)	0.69 (0.50)	0.58 (0.45)

Pre = Pretreatment; Post = Posttreatment; CHCC = Child Health Center Care; EAS = Emotional Availability Scales; EPDS = Edinburgh Postnatal Depression Scale; GSI = the General Severity Index of the SCL-90; MIP = Mother-Infant Psychoanalysis; SPSQ = the Swedish Parental Stress Questionnaire.

tendencies toward fewer somatic child diseases in the MIP group, $\chi^2 = 3.363$, $p = .067$, and the birth of a new child in the family, $\chi^2 = 2.721$, $p = .099$.

Maternal Representations of the Child

For the entire sample, 38 of 61 (62.3%) mothers had balanced representations. In comparison with those having a nonbalanced representation, they had fewer delivery complications, $\chi^2 = 4.115$, $p = .042$, and tended to have partners with higher education, $\chi^2 = 7.762$, $p = .051$. We also found a tendency, $t(58) = 1.686$, $p = .097$, for mothers with balanced representations to have children with more optimal CGAS scores (6.5 points higher).

There were no between-group differences on the distribution of the WMCI categories, as indicated in Table 1. A t test indicated that balanced and nonbalanced mothers had received an equal amount of sessions; thus, the absence of effects was not due to variations in therapy duration. We then performed logistic regressions to investigate the associations between the WMCI representations, the treatment groups, present life events, and the children's Ideal types and global functioning (CGAS). No significant interactions were found.

Maternal Psychological Well-Being

Table 2 shows the scores of the maternal questionnaires assessed at four points—intake, 6 months later, at $3\frac{1}{2}$ years, and $4\frac{1}{2}$ years—and the EAS scores assessed at three points—intake, 6 months later, and at $4\frac{1}{2}$ years.

In a first analysis, the MLM equations compared, step by step, scores at these four measurement points. The only significant effects were found on the EPDS and the SPSQ between Points 1 and 2; that is, pre- and posttreatment as reported in the infant study. In the next analysis, we sought to get an overall comparison of pre- versus posttreatment levels, and also to increase statistical power. These MLM equations took into account all posttreatment scores (directly after therapy and at child age $3\frac{1}{2}$ and $4\frac{1}{2}$ years) while controlling for pretreatment scores. As seen in Table 3 and as illustrated in Figure 4, the initial EPDS effects in favor of MIP were maintained throughout the follow-up, $t(70.8) = -2.368$, $p = .021$, Cohen's $d = 0.33$. The effect size was calculated as the standardized value of the estimate (-1.710) of the differential effect. In contrast, the initial SPSQ effects from the infant study disappeared, and there were still no effects on the GSI.

TABLE 3. *Between-Group Comparisons Pre-/Posttreatment. Multilevel Modeling Analyses With All Three (EAS) or Four (EPDS, SPSQ, GSI) Postmeasurement Scores. Estimates Reflect Differences in Posttreatment Mean Scores (MIP − CHCC) While Adjusting for Pretreatment Differences*

Variable	Estimate	*SE*	*df*	*t*	*p*
EAS Sensitivity	0.023	0.030	53.885	0.789	.434
EAS Structuring	−0.008	0.026	54.947	−0.299	.766
EAS Nonintrusiveness	0.010	0.033	53.240	0.286	.776
EAS Responsiveness	−0.036	0.030	50.897	−1.212	.231
EAS Involvement	−0.042	0.031	50.984	−1.346	.184
EPDS	−1.710	0.722	70.774	−2.368	.021
SPSQ	−0.035	0.077	70.639	−0.452	.653
GSI	−0.093	0.061	69.357	−1.508	.136

EAS = Emotional Availability Scales; EPDS = Edinburgh Postnatal Depression Scale; GSI = General Severity Index; SPSQ = Swedish Parental Stress Questionnaire.

One third of the CHCC mothers received additional, brief treatments. A renewed MLM analysis compared results for three treatment groups; MIP, CHCC with additional treatment, and CHCC without such treatment. The only significant result was a difference in favor of MIP, as compared with CHCC with additional treatment, on the EPDS. The MIP mothers' mean score was 2.37 points better than this subgroup of CHCC mothers, $t(73.0) = 2.338$, $p = .022$.

Mother–Child Interaction

We analyzed, on the entire sample, the associations between the EAS and the other measurements. The two child dimensions

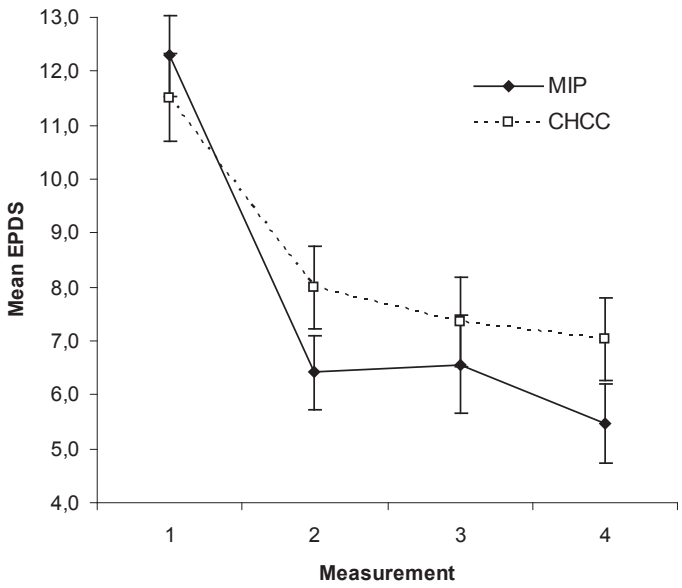

FIGURE 4. EPDS scores at intake, 6 months later, and at $3\frac{1}{2}$ and $4\frac{1}{2}$ years. The error bars depict 95% confidence interval.

TABLE 4. *Total and Mediated Effects of Treatment on the CGAS and the Probability for OK Type. Maximum Likelihood Method With Robust SEs Estimation*

	CGAS				OK Child Type			
Effect	B^a	*SE*	*p*	%[c]	B^b	*SE*	*p*	%[c]
Total	.688	.229	.003	–	.412	.115	<.001	–
Via EPDS	.067	.063	.286	9.7	.046	.035	.184	11.2
Via SPSQ	−.022	.044	.610	−3.2	−.010	.019	.617	−2.4
Via EAS Sens.	.053	.062	.393	7.7	−.010	.027	.718	−2.4
Via PIR-GAS	.197	.138	.152	28.6	.059	.049	.228	14.3
Total Indirect	.294	.133	.027	42.7	.086	.048	.076	20.9

CGAS = Children's Global Assessment Scale; EPDS = Edinburgh Postnatal Depression Scale; SPSQ = Swedish Parental Stress Questionnaire; EAS = Emotional Availability Scales; PIR-GAS = Parent–Infant Relationship Global Assessment Scale.

correlated positively, responsiveness: $r = .262$, $p = .044$, involvement: $r = .2$, $p = .032$, with the CGAS. Structuring was better among mothers with a balanced WMCI representation, $t(58) = 2.159$, $p = .035$. Finally, the two Child types did not differ on any EAS dimension. As seen in Table 3, we found no between-group effects on any EAS dimension.

Analysis of Mediators

The infant study had yielded four between-group effects; the EPDS, the SPSQ, the EAS, and the PIR-GAS. We explored if any of these variables mediated outcomes on the two variables which had shown between-group effects in the children at the follow-up; the CGAS and the Child types. Although the total mediated effect of treatment via he EPDS, SPSQ, EAS Sensitivity, and PIR-GAS was significant for the CGAS, $p = .027$, and marginally significant for the OK Type, $p = .076$, none of the specific mediated effects reached significance.

DISCUSSION

In a study preceding the present one (B. Salomonsson & Sandell, 2011a, 2011b), a sample of mothers and their babies had been randomized to MIP treatment or CHCC. The entire sample showed clinical pretreatment levels on those variables for which community scores have been reported: depression, stress, and general psychic distress. Six months later, between-group differences in favor of MIP were found on depression, relationship quality, and maternal sensitivity. Marginally significant effects were found on parental stress.

When the children had reached $3\frac{1}{2}$ and $4\frac{1}{2}$ years, they were followed up with their mothers; at $3\frac{1}{2}$ years only by mother-report questionnaires and at $4\frac{1}{2}$ by questionnaires and interviews with mother and child. The discussion focuses on the results at $4\frac{1}{2}$ years. Between-group differences were found on the children in favor of MIP on global functioning and psychological well-being (M.W. Salomonsson et al., 2014). The present article reports on outcomes on the mothers and the mother–child interactions. We found effects on maternal depression in favor of MIP, but no effects on major life events, maternal representations of the child, maternal stress and psychological distress, or mother–child interactions. The discussion begins by comparing our sample with normal populations. Second, it focuses on how the maternal effects developed over the entire course of the study. Third, since we now have analyzed the results of both mothers and children, we are in a better position to discuss the mechanisms behind the beneficial, long-term consequences for the children.

Comparing This Sample With Normal Populations

The maternal EPDS mean values at a child age of $4\frac{1}{2}$ years were 5.47 and 7.03 in the MIP and the CHCC groups, respectively. In comparison, a large Australian normal sample (Giallo, Woolhouse, Gartland, Hiscock, & Brown, 2015) had EPDS mean scores of 5.38 up to 4 years' postpartum. Another large American study (Campbell, Matestic, von Stauffenberg, Mohan, & Kirchner, 2007) used the Center for Epidemiologic Depression Scale (Radloff, 1977) to measure depression up to a child age of 7 years. Ninety percent remained either at a low or moderate level, or became normalized from initially clinical levels. A similar development was found in another follow-up study (Cooper et al., 2003) of postnatally depressed women. Our scores on depression were thus in the normal range.

The mean SPSQ value for Swedish women is 2.52 (Östberg et al., 1997). For the GSI, normative figures are 0.45 for 25- to 40-year-old Swedish women (Fridell et al., 2002) and 0.51 for Swedish

mothers 18 months' postpartum (Börjesson, Ruppert, & Bågedahl-Strindlund, 2005). These figures correspond to ours. Mothers in the entire sample thus reverted to normal scores.

Concerning the EAS Sensitivity scale, our scores were 0.68 and 0.67 in the MIP group and CHCC group, respectively. We have transformed the normal values reported by Biringen et al. (2005) according to the procedure used in this study; that is, by dividing the raw score with the maximum score. Their value, 0.65, indicates that our levels were equal and at nonclinical levels.

For the WMCI, no trajectory could be obtained since this was a 1-point measurement. Among the mothers in our sample, 62% had balanced representations. Compared with community measures, 53 to 57% (Borghini et al., 2006; Coolbear & Benoit, 1999; Vreeswijk et al., 2012), our figures were slightly more optimal. All in all, mothers in both treatments groups now seemed to function at nonclinical levels on depression, psychological distress, stress, sensitivity, and attachment representations.

Maternal Effects During the Child's Infancy and Preschool Years

The hypotheses that the mothers in the MIP group would demonstrate more favorable results were confirmed on the depression measure. Posttreatment, the scores in this group diminished to a lower level and remained there throughout the assessments at $3\frac{1}{2}$ and $4\frac{1}{2}$ years. In the study by Cooper et al. (2003), all active psychotherapies showed significant effects on the EPDS directly posttreatment. However, from a child age of 9 months up to 5 years, the control group reached the same scores as those for the index treatments. One possible explanation for these contrasting results is that compared with the British mothers, the Swedish MIP mothers received about twice as many therapy sessions, and at a higher frequency. Since associations between maternal depression and child disturbance are well-documented (Tronick, 2007) even up to adolescence (Murray et al., 2010), the clinical significance of these effects is obvious. In contrast, parental stress diminished equally, 11%, in both groups from infancy to $4\frac{1}{2}$ years. A Canadian study (Cohen et al., 2002) with a follow-up time of 11 months showed a similar decrease on a comparable measure, the Parental Stress Index (Abidin, 1990).

Mechanisms Behind the Long-Term Effects for the Children

On this subject, we suggest two alternative explanations. The first focuses on the mothers, and the second on the children. Abidin (1992) investigated the associations between parental stress and child psychopathology. In his model, parents' distorted thinking about their children is associated with stress, which then increases their maladaptive behavior and child psychopathology. Our sample had no long-term, between-group effects on stress, and there were no differences in mothers' representations of their children. To the extent that mothers' cognitions influence their children's development, such factors cannot explain the effects on our children's well-being and functioning. In addition, our findings do not support that any differential effects on maternal interactive contributions lay behind the MIP children's more optimal psychological characteristics and global functioning. In contrast, the initial between-group effects on maternal depression were maintained at $3\frac{1}{2}$ and $4\frac{1}{2}$ years. We suggest that this helped the MIP mothers to better support and appreciate their children throughout infancy and toddlerhood. Put simply, they were less sad and more open to their children's communications, which was beneficial for the young children.

The second, child-oriented explanation builds on two facts: Several effects were achieved during infancy, a sensitive period in the children's development, and the MIP therapists focused consistently on the infants' predicament. MIP helped mothers to more quickly recover from depression, which has been shown in other studies of psychotherapy and postnatal depression (Holden, Sagovsky, & Cox, 1989; O'Hara et al., 2000; Wickberg & Hwang, 1996). We suggest that such timing and speed left a trace in the children's development. Infants seem to be differentially impacted by maternal depression depending on its onset and duration (Field, 1992). The referred study reported that mothers who were depressed during the first months of their child's life, but no longer at 6 months, had children who, in parallel, no longer behaved in a depressed-like fashion. If depression persisted for more than 1 year, the children had behavioral problems at the preschool stage (Field et al., 1996). Our infants' mean age at the start of MIP was 5 months, an age at which it was especially important for their development that the mothers got help. A recent study (Hayes, Goodman, & Carlson, 2013) has pointed in the same direction: Prenatal depression was associated with disorganized attachment at 12 months only if maternal parenting quality had been nonoptimal at 3 months. These authors underscored the importance of "enhancing maternal parenting behaviors during this early period in development" (p. 133). Our effects on maternal sensitivity directly posttreatment indicate that MIP helped mothers not only to become less depressed but also to improve their parenting behavior.

We also emphasize that therapies started when the babies suffered and needed immediate help.

In comparison to other therapy modes, the MIP therapists more directly addressed the infants about their distress and paid close attention to their emotional communications (Norman, 2001; B. Salomonsson, 2014). This was done during a sensitive stage of self development (Stern, 1985). Fraiberg (1982) suggested that children at this young age may show signs of pathological defenses (e.g., gaze avoidance), and the MIP therapists addressed such behavior.

If MIP left a trace in the children's development, one might ask if this could be detected as a mediator among any of the four variables that showed between-group effects in the infant study: depression, stress, parent–infant relationship, and sensitivity. The most plausible candidate would be sensitivity since several studies (Biringen, Skillern, Mone, & Pianta, 2005; Easterbrooks, Biesecker, & Lyons-Ruth, 2000; Lok & McMahon, 2006) have reported that it may affect child development. However, no

individual variable from the infant study functioned as a mediator. If MIP had direct effects on the infants which were not detected until the child was $4\frac{1}{2}$ years, this cannot be explained by one single factor. Rather, several factors seemed to work in unison.

Limitations

Most measures in the infant and follow-up studies were identical. Some were introduced only at $4\frac{1}{2}$ years since the WMCI was unavailable to us at the time of the infant study and because the CGAS is not applicable to infants. A measurement of the mother's reflective functioning might possibly have captured more subtle therapy effects. The initial treatments only comprised mothers and babies. Measures of the father's distress and interactive contributions would have added valuable information.

Both interviewers were psychoanalysts, and their allegiance (Luborsky et al., 1999; Markin & Kivlighan, 2007; Munder, Brütsch, Leonhart, Gerger, & Barth, 2013) must be taken into account. Everything was done to minimize its effects; the child interviewer and all raters were blind to the assignments and case histories. As for the mothers' demand characteristics (Orne, 1962), they knew that both interviewers were analysts, and thus MIP mothers might feel that they belonged to "the researchers' team." We acknowledge the possible influence of these factors, although their impact cannot be calculated.

Another limitation is that the CHCC was more heterogeneous than that of MIP. For the majority of the CHCC mothers, treatment consisted of advice and support from the CHC nurse. The MIP group also received intensive treatment by specially trained psychotherapists. This should be taken into account when comparing between-group effects. Further studies should compare MIP with other well-delineated mother–infant psychotherapies.

Conclusions and Clinical Implications

In a long-term follow-up study of an RCT comparing two treatments of mothers and infants with baby worries, one of them established and containing mostly supportive elements (CHCC), and the other new and containing psychodynamically based interventions (MIP), we found between-group effects on the mothers' depression. Contrary to our hypotheses, we found no effects on their representations and interactive contributions. As reported in an earlier article, effects were found on the children's functioning and psychological well-being. We take this to indicate that MIP has certain positive, long-term effects on both participants—mother and child.

To understand the long-term effects on the children, we propose that the MIP mothers' relatively lower level of depression over the years positively affected their ways of handling and responding to their children. It is also possible that there were direct effects on the infants due to their being consistently addressed by the therapists about their distress. These factors may have acted in unison to impact beneficially on their development. To better understand the mechanisms of change in mothers and children, an upcoming study will complement the between-group investigations with qualitative case analyses.

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