

Development and Aging

Adding “Circle of Security – Parenting” to treatment as usual in three Swedish infant mental health clinics. Effects on parents’ internal representations and quality of parent-infant interaction

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Risholm Mothander, P., Furmark, C. & Neander, K. (2017). Adding “Circle of Security – Parenting” to treatment as usual in three Swedish infant mental health clinics. Effects on parents’ internal representations and quality of parent-infant interaction. *Scandinavian Journal of Psychology*.

This study presents effects of adding Circle of Security-Parenting (COS-P) to an already established comprehensive therapeutic model for early parent-child intervention in three Swedish infant mental health (IMH) clinics. Parents’ internal representations and quality of parent-infant interaction were studied in a clinical sample comprised of 52 parent-infant dyads randomly allocated to two comparable groups. One group consisted of 28 dyads receiving treatment as usual (TAU) supplemented with COS-P in a small group format, and another group of 24 dyads receiving TAU only. Assessments were made at baseline (T1), 6 months after inclusion (T2) and 12 months after inclusion (T3). Changes over time were explored in 42 dyads. In the COS-P group, the proportion of balanced representations, as assessed with Working Model of the Child Interview (WMCI), significantly increased between T1 and T3. Further, the proportion of emotionally available interactions, as assessed with Emotional Availability scales (EA), significantly increased over time in the COS-P group. Improvements in the TAU-group were close to significant. Limitations of the study are mainly related to the small sample size. Strength is the real world character of the study, where COS-P was implemented in a clinical context not otherwise adapted to research. We conclude by discussing the value of supplementing TAU with COS-P in IMH treatment.

Key words: Circle of Security-Parenting, infant mental health interventions, infant-caregiver interaction, attachment theory, EA-scales, WMCI.

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INTRODUCTION

A central tenet of attachment theory is that the parent’s thoughts about the child affect his or her ability to provide a psychological secure base for the child (Bowlby, 1969/1982). Hence content and quality of caregivers’ internal representations of their children, as well as how the representations are transformed into caregiving behavior, are central themes for clinicians interested in attachment theory. Parents’ sensitive and emotionally responsive behavior is seen as related to the child’s development of own internal working models of relationships (Bretherton & Munholland, 2008) and secure attachment (Ainsworth, Blehar, Waters & Wall, 1978). Longitudinal studies have demonstrated how the quality of the infant-caregiver relationship and infant attachment security are associated with socio-emotional outcomes for children (Cassidy & Shaver, 2016; Sroufe, Egeland, Carlson & Collins, 2005; Zeanah, 2009). A question of particular clinical interest for infant mental health (IMH) workers is if parents’ internal representations of their children are stable over time or if they can change as a result of a supportive environment, interaction with the growing child, or following a therapeutic intervention. One method that has attracted clinicians is the Circle of Security (COS) (Marvin, Cooper, Hoffman & Powell, 2002). The COS is an attachment-based mental health group intervention with two major branches, COS-I (Intervention) and COS-P (Parenting). The present study explores the efficacy of COS-P in a Swedish IMH clinical setting.

Infant mental health – a multifactorial approach

In Sweden, the promotive IMH work is based in the free health care for all preschool children provided through local child health care (CHC) centres, where minor early parenting difficulties are also addressed. When caregiver-infant relationship problems are more severe than can be cared for in the CHC centres, families are referred to specialized IMH clinics for comprehensive therapeutic interventions. No individual somatic or psychiatric treatment for caregivers is provided in the IMH clinics, but if needed, the clinics collaborate with social welfare or adult psychiatric clinics. When a family is referred for IMH treatment, assessments ensue, and a treatment plan is set up. Each family is assigned a therapist responsible for their case, and appointments vary from 1–3/week. Besides counselling, the main focus is caregiver-child interaction treatment offered via different and often combined modalities: “in vivo” (environmental), “in verbis” (verbal), “in video” (video-guided interaction) (Neander & Engström, 2009). In the “in vivo” format, the therapist and the caregiver focus on everyday life situations. The aim is to use the interaction as a port of entry into the relationship, as described by Stern (1995), and to enhance the caregiver’s mentalizing capacity to imagine how the infant perceives the world. Joint reflection by therapist and parent regarding the “now moments” of the caregiver-infant interaction is fundamental. The “in verbis” form of treatment focuses on the caregiver’s representations of the infant and self as a parent. Parents may need to talk about how their own attachment

experiences influence their caregiving. Finally, video feedback is used in the “in video” mode of treatment to support caregivers’ reflective thinking. Interaction sequences are filmed, reviewed and discussed in sessions, linking the caregiver’s initial problem and the therapist’s idea of appropriate support.

Evaluations have indicated the value of the existing form of IMH work (Neander & Engström, 2009; Wadsby, Sydsjö & Svedin, 2001), but today both clinicians and politicians ask for evidence-based, structured and theoretically well-grounded methods. In addition to enhancing the effectiveness of the intervention, new methods should encourage the parents’ involvement in the clinical process.

The Circle of Security paradigm

The COS paradigm entails a set of methods that addresses three basic motivational systems: the attachment system, the exploratory system, and the caregiver system. One treatment target of COS is to encourage the parent’s willingness to watch over, comfort, protect and help organize the child’s feelings. The caregiver is encouraged to reflect upon the role as the single most important person in his or her child’s life, encompassed by support from group members and therapists (Mercer, 2015; Powell, Cooper, Hoffman & Marvin, 2014). In the original COS Intervention (COS-I), pre- and post-intervention attachment assessments are fundamental. The caregiver is interviewed and the caregiver-child interaction is videotaped to establish the child’s attachment status. The COS intervention then takes place over a 20-week period, in which four to six caregivers meet in group sessions on a weekly basis. The video clips from the pre-group assessments are used as a key component in discussions of how children cue and miscue their caregivers about their emotional needs. Attachment classification, with a structured attachment measure, is typically used as a post-intervention outcome measure.

Since the creation of COS-I, Cooper, Hoffman, and Powell (2009) have developed a condensed version of the COS program, the Circle of Security-Parenting, (COS-P), the method in focus in the present study. It has the same theoretical base as the COS-I, but follows a shorter, psycho-educational manualized eight-session DVD protocol.

Instead of using video clips of caregivers’ own interaction with the child, COS-P uses pre-produced video vignettes of secure and problematic caregiver-child interactions in a group setting.

All versions of COS use similar features, such as video examples, to facilitate caregivers’ understanding of their children’s behavior. The COS-paradigm interventions (both COS-I and COS-P) integrate attractive, informative graphics presenting significant attachment-related messages into the group discussions. Parents are introduced to a new vocabulary to express themselves emotionally and to describe their interactions with their child. COS is assumed to lead to changes in children’s patterns of attachment and in parental reflective capacity as well as parental representations (Cooper, Hoffman & Powell, 2009).

Empirical support for COS-protocols

In spite of COS interventions being implemented in many countries, the empirical support is still limited (Berlin, Zeanah &

Lieberman, 2016). A recent meta-analysis, examining the efficacy of ten COS studies, concluded that the overall effects of the intervention demonstrate promising results, but more research is needed (Yaholkoski, Hurl & Theule, 2016). Significant within-subject changes of children’s attachment classifications from disorganized to organized, the majority changing to secure, were found after COS-I intervention in a group of high-risk toddlers and pre-schoolers (Hoffman, Marvin, Cooper & Powell, 2006). In a study from Iran, where mothers of preschool children attended the 20-week COS-I protocol, children’s attachment and wellbeing were rated as improved after intervention (Dehghani, Malekpour, Abedi & Amiri, 2014). COS-I has also been demonstrated to improve parental reflective functioning, caregiver representations of the child, and changes in children’s attachment classifications (Huber, McMahon & Sweller, 2015; Huber, McMahon & Sweller, 2016). In two studies, Cassidy and her research group have reported the values of using COS-versions in clinical work, in one study on a group level (Cassidy, Ziv, Stupica *et al.*, 2010) and in another on an individual level (Cassidy, Woodhouse, Sherman, Stupica & Lejuez, 2011).

Regarding COS-P few empirical studies are published. Gray (2015) reported that COS-P was found valuable as a tool for childcare providers to improve their efficacy in dealing with challenging child-behaviors. COS-P has also been reported to be useful in clinical case-work to improve parental functioning (Pazzagli, Laghezza, Manaresi, Mazzeschi & Powell, 2014). When mothers in a substance-abuse treatment program were given COS-P, their caregiving improvement was related to educational level and history of maltreatment (Horton & Murray, 2015). More recently, an RCT trial of COS-P in a low-income sample of mothers within the Head Start Program reported that intervention effects were moderated by maternal attachment style or depressive symptoms (Cassidy, Brett, Gross *et al.*, 2017). The four COS-P studies included in the Yaholkoski and colleagues (2016) meta-study, were all students’ reports. One of the studies included was based on unpublished data (Gray, 2013), one was a conference poster (Page & Cain, 2010), and two were Master’s or Doctoral theses (Horton, 2013; Rennie, n.d.).

Representations of self and the child

One of the few methods available to assess caregivers’ inner representations of their parenting and the parent-infant relationship is the Working Model of the Child Interview (WMCI) (Zeanah, Benoit, Barton & Hirshberg, 1996). WMCI is an approximately one-hour-long interview through which subjective narrative patterns in caregivers’ descriptions of their infant and the relationship with the infant can be studied (Benoit, Zeanah, Parker, Nicholson & Coolbear, 1997; Zeanah *et al.*, 1996). Questions about the child and the relationship are asked, and the parent is requested to clarify answers given with examples. The interview is coded into one of three main categories of internal representations: Balanced, Disengaged or Distorted (Zeanah *et al.*, 1996). Parents with balanced representations typically describe their child empathetically as a unique individual and convey that they are coherently engaged with the child. Parents with non-balanced representations have difficulties in perceiving the child’s needs. Among the unbalanced, parents with disengaged representations

tend towards emotional aloofness, while those with distorted representations have difficulties presenting a consistent inner model of the child.

A number of studies have used WMCI to study developmental trajectories regarding parental representations over time (Vreeswijk, Maas & van Bakel, 2012). Mothers with prematurely born infants reported stability, but also an increase in balanced representations between 6 and 18 months after birth (Borghini, Pierrehumbert, Miljkovitch, Muller-Nix, Forcada-Guex & Ansermet, 2006). Maternal representations from pregnancy through the first infant year seem to remain stable (Huth-Bocks, Theran, Levendosky & Bogat, 2011; Madigan, Hawkins, Plamondon, Moran & Benoit, 2015), but they may also change during the course of people's lives as they acquire new experiences (Weinfield, Whaley & Egeland, 2004). In an intervention study for substance-using women, the quality of representations improved after an attachment-based intervention (Suchman, Decoste, McMahon, Rounsaville & Mayes, 2011). Other studies have demonstrated how external factors such as poverty, violence, family structure and degree of social support are associated with quality of caregivers' representations of their children (Korja, Savonlahti, Haataja *et al.*, 2009; Weinfield, Sroufe, Egeland & Carlson, 2008).

Caregiver – child interaction

According to Stern (1985/2000), both parent and child express their representations in behavior as they interact with one another. Emotional availability in the caregiver's nurturance encompasses the capacity to initiate and respond to the infant's signals, joyful aspects of interaction and the ability to structure the interaction according to what can be expected from a child at a certain age and developmental level (Emde, 2012).

The Emotional Availability scales (EA) can be used to assess the capacity of the dyad to share an emotionally healthy relationship (Biringen, Derscheid, Vliegen, Closson & Easterbrooks, 2014). Both members of a well-functioning dyad are emotionally available for each other: the caregiver being sensitive to cues and communications from the child; the child being responsive and involved in appropriate ways. In an online intervention for families with adopted children, significant improvements were found in a number of attachment-related factors, such as parent–child interaction and parent perceptions regarding emotional availability (Baker, Biringen, Meyer-Parsons & Schneider, 2015). A brief attachment intervention based on EA scales and added to routine maternity care was found to strengthen adolescent–mother–infant relationships during transition to motherhood (Nicolson, Judd, Thomson-Salo & Mitchell, 2013). More recently, an RCT trial of 60 dyads with prematurely born infants presented better scores on the maternal scales “sensitivity” and “structuring,” and for the children on the scale “child involvement” after intervention (Flierman, Koldewijn, Meijssen *et al.*, 2016).

The present study

The aforementioned studies have indicated that interventions can change the quality of the early relationship in both high-risk and

low-risk samples of families. With its base in attachment theory and focus on parents' involvement in the treatment process, COS-P has become a widely spread psycho-educational method. The method supports parents learning and reflection using a non-judging and friendly tone. However, due to the relative lack of empirical support, the evaluation of the effectiveness of COS-P is highly warranted, especially in real-life clinical settings, where results can easily be implemented in clinical work (Toth, Gravener-Davis, Guild & Cicchetti, 2013).

The overarching aim of this study was to examine effects of COS-P added to treatment as usual (TAU), as applied in Swedish IMH clinics. Specifically, the aims were to evaluate if COS-P improves parental internal representations and if COS-P enhances quality of caregiver–infant interaction. Since both the parent's representations of the child and the behavioral interaction with the child are seen as important, two different outcome measures (WMCI, EAS) were chosen to assess qualitative changes.

Hypothesis 1 Caregivers in the COS-P+TAU group would have more balanced representations as measured by WMCI than parents in the TAU-only group after intervention.

Hypothesis 2 Caregivers in the COS-P+TAU group would show greater caregiver–child emotional availability as measured by EA scales than TAU-only parents following intervention.

METHODS

Participants

Study participants were 52 parents (47 mothers and 5 fathers who identified themselves as the primary caregiver), with children aged 0–4 years. The dyads were in planned or ongoing treatment because of caregiver–child relationship problems. Inclusion criteria for the study were: child age and primary caregiver's mental health status, as assessed by a clinician assigned to the case, allowing attendance in a COS-P group. Participants were randomized into two groups, one COS-P + TAU group $n = 28$ (in present study named COS-P) and one TAU only group $n = 24$ (named TAU). At T3 COS-P were $n = 25$ and TAU group $n = 17$ (for more information see Fig. 1), which were the group sizes used for exploring changes over time. The study design was approved by the regional Ethical Review Board in Stockholm (Log. No. 2013/5:4).

Procedure

This real-life study took place in 2013–2014 at three IMH clinics in different parts of Sweden. One of the clinics was an outpatient child psychiatry clinic, and the other two were child psychiatry and community-based outpatient clinics. The initial phase of the study focused on staff training. Four therapists at each IMH clinic attended a 4-day COS-P group leader course (i.e. 12 group leaders). Two therapists at each clinic were trained to conduct WMCI interviews, including reflective supervision by the first author, (in all six interviewers). Sets of play material to be used for recording free-play interaction and structured tasks were given to the clinics with instructions. Packages of questionnaires were

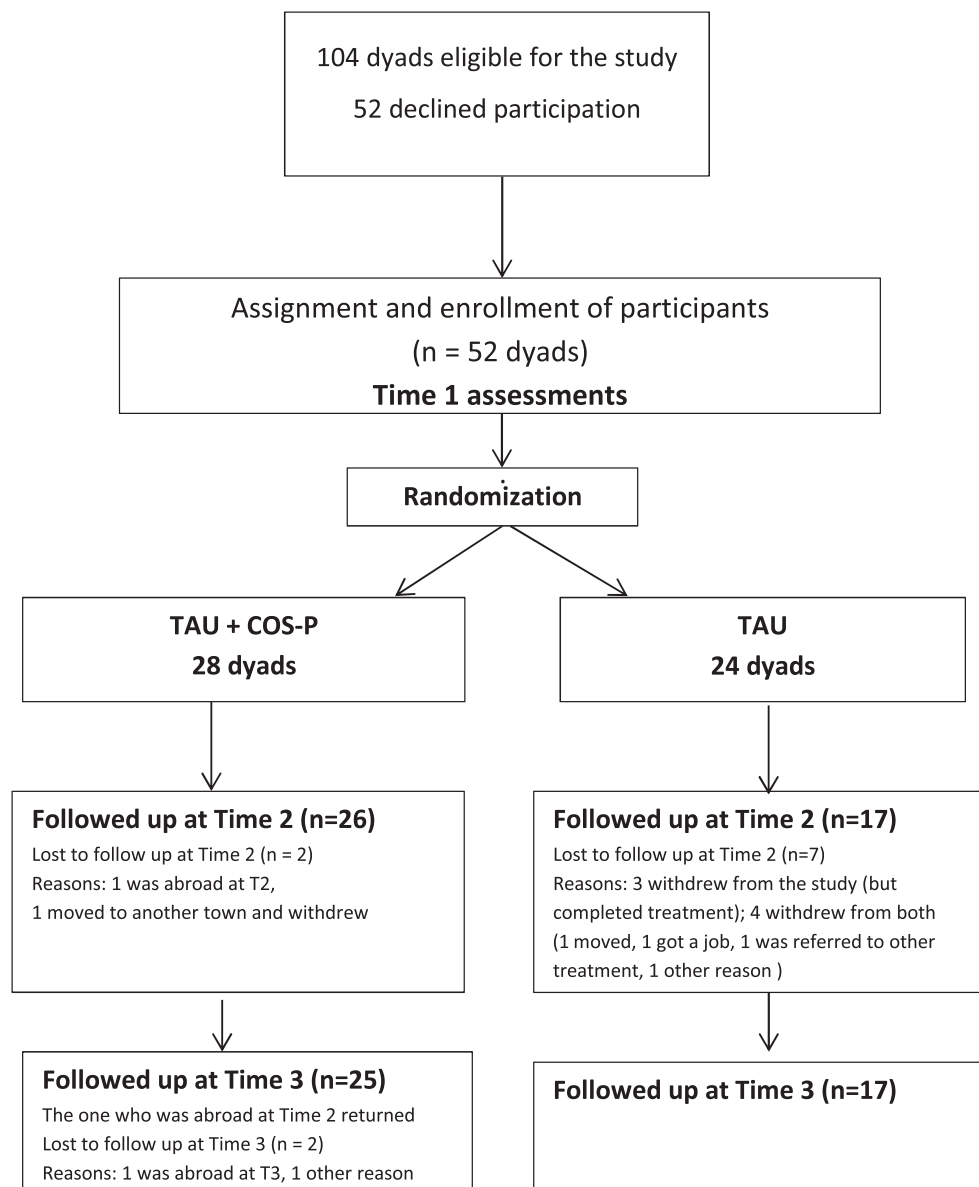


Fig. 1. Assignment and enrollment of participants.

distributed to the clinics, together with instructions on how to present them to caregivers, how to store the completed questionnaires and then return them to the research team. In the next phase, primary caregivers meeting inclusion criteria were invited to join the study by their assigned therapist. Eligibility to enter the study was determined on the basis of clinical assessments made by the assigned therapist in collaboration with the local COS-P group leaders. To avoid pressure on vulnerable caregivers, a list is provided in the COS-P manual defining caregivers who are not suited for COS-group intervention (Powell *et al.*, 2014). Caregivers with current drug and/or alcohol abuse, acute mental health problems such as significant depression, or caregivers acting out narcissistic issues by denigrating others were thus not invited to join in the study. Eligible parents were informed that if they agreed to participate, some would join a parental group in addition to TAU, others not, and that any decision regarding participation in the study would not affect their

planned treatment. An information leaflet was given to the parent to take home and discuss with the partner before a signed letter of consent was handed in to the clinic.

After consent, data was collected regarding baseline characteristics (T1), including parental and infant age and sex, parent's place of birth, first language, marital status, educational background and financial situation. The caregiver rated his or her own psychological wellbeing with self-screening questionnaires. An external diagnostic expert in collaboration with the assigned therapist made a DC:0-3R consensus evaluation in a telephone meeting. Parents were interviewed with WMCI, and the interviews were videotaped to allow later scoring. Parent–infant interactions were videotaped in two situations: a free-play and a structured task.

When T1 data had been collected, the therapist responsible for the case picked one of a set of pre-prepared sealed envelopes determining group allocation in the presence of the parent. In all,

104 primary caregivers were invited to the study, and 52 (50%) responded positively. Out of these, 28 caregivers were allocated to COS-P, (two consecutive groups at each IMH clinic, led by two trained COS-P group leaders) and 24 were allocated to TAU only. Of the 28 caregivers, 27 attended the eight COS-P sessions in their allocated group; no parents other than those included in the study attended the groups.

No adaptations of prevailing treatment programs in the IMH clinics were made on account of the study. Thus the model for treatment as usual (TAU) was offered to the caregivers according to their individual treatment plan, as described above.

Infant–parent interaction was again recorded six months after inclusion date (T2) and 12 months after inclusion date (T3). At T3, caregivers were re-interviewed with WMCI. Two COS-P dyads and seven TAU dyads were lost between T1 and T2. At T3 the number of dyads included was 25 COS-P dyads and 17 TAU dyads (see Fig. 1).

Measures

Caregivers' wellbeing. The prevalence of parents' depressive symptoms at T1 was assessed using the Centre of Epidemiological Studies–Depression Scale (CES-D) (Radloff, 1977). Twenty items are rated on a scale of 0–3, sum scores ranging from zero to 60, with higher scores indicating more depressive symptoms. Reliability data obtained from within Scandinavia has shown the CES-D to have high internal consistency ($\alpha = 0.87$) (Scott & Melin, 1998). In the current study the α -coefficient was 0.92.

The State Anxiety Inventory (STAI-S) (Spielberger, Gorsuch & Lushene, 1970) was used to screen for parent's feelings of anxiety. It is a valid and reliable self-rating twenty-item scale adapted in more than 40 languages and with high internal consistency ($\alpha = 0.86$) (Bann, Parker, Grobman *et al.*, 2017). Sum score means, with higher scores indicating more anxiety, are reported to vary between 44–46 in clinical samples. In the current study the alpha coefficient was 0.95.

The Swedish Parental Stress Questionnaire (SPSQ) (Östberg, 1999) was used to assess levels of parental stress in the caregiving situation. The SPSQ consists of 34 items partly adapted from and modelled on the Parental Stress Index (PSI) (Abidin, 1990), but focusing exclusively on the parental domain. Higher scores indicate higher levels of parental stress. The scale has been shown to have good internal consistency ($\alpha = 0.89$), and when validated against social family background factors and infant problems, results have been satisfactory (Östberg, Hagekull & Hagelin, 2007). In the current study the alpha coefficient was 0.89.

Children's mental state. To get a clinical picture of the infants included in the sample at T1, the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (DC:0-3R) (Zero to Three, 2005) was used. DC:0-3R Axis I focuses on the infant's distress and/or any expressed maladaptive behavior. Axis II classifies the caregiving relationship. Axis III addresses medical and developmental disorders and conditions, whereas Axis IV assesses psychosocial stressors. In this study the sum of stressors was used as a measure of accumulated stress. Axis V focuses on the infant's age-appropriate socio-emotional functioning.

Representations of the infant. The Working Model of the Child Interview (WMCI) (Zeanah *et al.*, 1996) was used at T1 and T3 to assess caregivers' experiences of the infant, their representations of the relationship with their infant and thoughts about the child's future. The interviews were conducted according to the WMCI protocol, by one of the trained interviewers at each clinic at T1 and by the other trained interviewer at T3 to avoid any contamination. The interviews were coded blind by a WMCI-certified main coder (first author), trained by the constructor of the interview, and an assistant coder (second author, trained to reliability by the first author). Interrater reliability between the main and the assistant coder, calculated on 20% ($n = 18$) of the interviews, reached 88% category reliability ($\kappa = 0.79$, $p < 0.001$). (To become a certified coder, 80% category reliability with the constructor is required). Of the interviews, 76% were coded by the main coder and 16% by the assistant coder, and 8% were co-coded into consensus because of uncertainty in the coding. Both coders were blind to parent's group allocation, but not to time, since questions about pregnancy experiences were excluded in the second interview. Due to technical failures, two WMCI interviews were lost at T1, and one caregiver could not be reached at T3. Coding of the WMCI material was undertaken according to the coding scheme in a two-step procedure: first, the eight scales of the representations were coded using six five-point Likert scales (1–5) to capture qualitative features of the representations, with higher values indicating better quality. Then, the narratives were categorized as balanced or unbalanced, the latter including disengaged and distorted representations. In the present study, the results are reported using the categories described in the two-way category model (balanced/unbalanced) of the original WMCI version. Considering the small sample and the fact that SSP films were not available to allow comparisons, the two-way WMCI classification system was considered appropriate.

Caregiver–child interaction. The Emotional Availability (EA) scales (Biringen *et al.*, 2014) were used to assess the capacity of the dyad to share an emotionally healthy relationship. Assessments were based on videotaped caregiver–child-interaction sequences from T1, T2 and T3, filmed in the IMH clinic environment. They included one structured situation, where the setting was adapted to the age of the child, and one non-structured free-play situation. The 131 videotaped interactions were coded blind by an external EA-certified coder, trained to reliability by the constructor of the EA scales. Interrater reliability between the external coder and a second coder (third author, also trained to reliability), calculated on 20% of the interactions (28 films), reached 87% category reliability ($\kappa = 0.79$, $p < 0.0001$). In addition, 15% (20 films) of the interactions were co-coded into consensus. The quality of the interaction was evaluated in caregiver dimensions: Sensitivity, Structuring, Non-intrusiveness and Non-hostility, as well as child dimensions: Responsiveness to and Involvement in the caregiver (Biringen *et al.*, 2014). The next step was to use the global clinical screener (EA2-CS), to classify caregiver–child emotional availability in holistic categories: Emotionally available, Complicated, Detached or Problematic relationships. In this study, the four-category EA model was used to report quality of interaction.

Data analyses

Members of the research team were not informed about each dyad's group allocation until data collection was completed and all WMCI and EA films were coded. Statistical analyses were undertaken to explore differences between the two groups at baseline as well as changes in the two groups related to the hypotheses formulated.

Statistical methods. Descriptive statistics are presented as numbers and percentages for categorical variables and as mean, standard deviation, median, minimum and maximum for continuous variables. For comparisons between background factors in COS-P and TAU groups, as well as comparisons with outcome measures, Fisher's exact test was used for dichotomous variables, Mantel-Haenszel Chi-square test for ordered categorical variables and Mann-Whitney test for dichotomous and continuous variables. MacNemar's test was used for analyses of change over time within COS-P and TAU groups. All significance tests were two-sided and conducted at the 5% significance level. Data were analysed with SPSS version 22 (IBM, Armonk, NY).

RESULTS

Preliminary statistical analyses

Differences in baseline characteristics between COS-P and TAU groups were analysed at T1. The results indicated that infants' mean age differed between the two groups, as presented in Table 1. Associations were explored between baseline characteristics and outcome measures at T1. No baseline characteristics were associated with WMCI results at T1. Infant's age was related to EA results at T1; infants in the group coded available were significantly older than those in the group coded non-available ($Md = 19$ months (3–36) compared to $Md = 9$ months (2–58) $p = 0.0035$). Fisher's exact test was used to explore associations between outcome measures (WMCI and EA, dichotomous categories) at T1. There was no significant association between WMCI and EA results at T1 ($p = 0.70$). The numbers of TAU sessions given pre-, during and post-intervention in the COS-P and the TAU groups respectively are presented in Table 2.

Caregivers' representations

Distribution of WMCI classifications in COS-P and TAU groups at T1 is presented in Table 3. At T1, WMCI classifications of 23 caregivers in the COS-P group were scored as seven balanced and 16 non-balanced (4 disengaged and 12 distorted), while WMCI classifications of 16 caregivers in the TAU group were scored as 3 balanced and 13 non-balanced (4 disengaged and 9 distorted). At T3, caregiver representations in the COS-P group were scored as 17 balanced and six non-balanced (2 disengaged and 4 distorted) while in the TAU-group as eight balanced and eight non-balanced (4 disengaged and 4 distorted).

Further analyses, undertaken with the two-way WMCI system, indicated a significantly increased proportion of classified balanced representations from T1 to T3 among COS-P caregivers, whereas there was no significant change in balanced

Table 1. Baseline characteristics in COS-P- and TAU-groups at T1. Mean (SD) / Median (range) or n (%)

| | COS-P n=28 | TAU n=24 | p-value |
|--|------------------------------|------------------------------|---------|
| Parent age: years | 30.1 (5.4) 30 (19-40) | 29.7 (6.0) 31 (18-44) | 0.87 |
| Parent gender: female | 24 (85.7%) | 23 (95.8%) | 0.36 |
| Infant age: months | 20.8 (16.2) 16 (03-58) | 8.3 (7.2) 6 (02-35) | 0.001 |
| Infant gender: fFemale | 13 (46.4%) | 11 (45.8%) | 1.00 |
| Parent: born in Sweden | 23 (82.1%) | 20 (83.3%) | 1.00 |
| Parent: Swedish as first language | 22 (78.6%) | 19 (79.2%) | 0.96 |
| Marital status: married or cohabiting | 21(75.0%) | 20 (83.3%) | 0.31 |
| Parent: educational level graduate or postgraduate | 13 (46.4%) | 13 (54.2%) | 0.78 |
| Parent: self-rated financial stress | 7 (25.0%) | 6 (25.0%) | 1.00 |
| DC:0-3R | | | |
| Axis I | 8 (28.6%) | 5 (20.8%) | 0.75 |
| Axis II | 11 (39.3%) | 12 (50%) | 0.48 |
| Axis III | 7 (25.0%) | 2 (8.3%) | 0.16 |
| Axis IV | 3.25 (2.05) 4.0 (0-8) | 3.35 (1.82) 3.0 (1-7) | 0.87 |
| Axis V | 18 (64.3%) | 16 (69.6%) | 0.77 |
| Parental well-being: STAI-S | 43.25 (11.2) 41.5 (26-68) | 45.5 (16.8) 42.0 (24-79) | 0.95 |
| Parental well-being: CES-D | 20.1 (11.1) 19.0 (7-45) | 25.3 (14.7) 25.5 (2-54) | 0.20 |
| Parental well-being: SPSQ | 104.8 (16.1) 104 (77-138) | 104.0 (25.3) 106 (42-145) | 0.83 |

Notes: For comparison between COS-P and TAU Fisher's exact test was used for dichotomous variables and Mann-Whitney U-test for continuous variables.

classifications between T1 and T3 in the TAU group. Differences between the COS-P and TAU groups at the different time points were not significant (see Table 3).

Caregiver-infant interaction

Distribution of EA classifications in COS-P and TAU groups at baseline is presented in Table 4. Results over time indicated a significant change towards more emotionally available interactions, from T1 to T3, in the COS-P group. The change over time was not significant in the TAU group. Differences between the COS-P and TAU groups were not significant (see Table 4). Results of individual movements between different EA zones are reported elsewhere (Risholm Mothander & Neander, 2017).

DISCUSSION

This naturalistic clinical study with two caregiver-infant groups, one receiving COS-P in addition to TAU and the other TAU only, demonstrates the value of adding COS-P to an already existing comprehensive treatment model. Our first hypothesis was confirmed: in the COS-P group, parental representations of their child and of themselves as caregivers had improved one year after study start and intervention, as shown in a significantly higher proportion of balanced representations in the COS-P group. In the

Table 2. Treatment as usual in COS-P and TAU-groups. Numbers, Mean (SD) / Median (range)

| | COS-P | | | TAU | | |
|--------------------------|----------------------------|--------------------------|-----------------------|-------------------------|-------------------------|-----------------------|
| | Before T1 n = 28 | T1 to T2 n = 26 | T2 to T3 n = 25 | Before T1 n=24 | T1 to T2 n = 17 | T2 to T3 n = 17 |
| Treatment as usual (TAU) | | | | | | |
| Total number of sessions | 19.7*(16.2) 13 (1–75) | 15.4 (10.6) 14 (1–38) | 5.3 (5.3) 3 (0–18) | 11.7 (8.7) 11 (1–40) | 11.7 (6.9) 11 (3–31) | 4.0 (5.6) 1 (0–22) |
| “In verbis” sessions | 13.2 (9.2) 11 (0–32) | 10.6 (8.0) 9 (1–41) | 3.8 (4.5) 2 (0–18) | 9.0 (5.8) 8 (1–21) | 8.5 (6.4) 7 (0–24) | 3.8 (6.8) 1 (0–28) |
| “In vivo” sessions | 14.2*(14.7) 11.5 (0–65) | 9.1 (10.1) 6.5 (0–37) | 1.7 (3.2) 0 (0–13) | 6.9 (6.4) 6 (0–22) | 9.6 (8.7) 6 80–30) | 1.8 (2.8) 0 (0–8) |
| “In video” sessions | 1.0 (2.13) 0 (0–9) | 1.0 (1.6) 0 (0–6) | 0.8 (1.0) 0 (0–4) | 0.4 (1.0) 0 (0–5) | 0.7 (1.1) 0 (0–4) | 0.3 (0.5) 0 (0–1) |

Note: * = < 0.05.

Table 3. WMCI classifications at T1 and T3 and change T1 to T3 for COS-P and TAU

| | COS-P N = 23 | TAU N = 16 | COS-P versus TAU p-value | Within COS-P p-value | Within TAU p-value |
|--|--------------|------------|-----------------------------|-------------------------|-----------------------|
| Proportion of balanced representations | | | | | |
| Balanced representations at T1 | 7 (30.4%) | 3 (18.8%) | 0.48 | | |
| Balanced representations at T3 | 17 (73.9%) | 8 (50%) | 0.18 | | |
| Change T1 to T3 | | | | | |
| Positive | 10 (43.5%) | 5 (31.2%) | 0.52 | 0.002 | 0.063 |
| Equal | 13 (56.5%) | 11 (69.8%) | | | |
| Negative | 0 (0%) | 0 (0%) | | | |

Notes: Change from T1 to T3 within groups was analysed with McNemars test. Comparison between COS-P and TAU was analysed with Fisher's Exact test.

Table 4. EA classifications at T1, T2 and T3, change T1 to T3 for COS-P and TAU, and comparison between the two groups

| | COS-P N=24 | | | TAU N=17 | | | COS-P versus TAU p-value | | | Within COS-P p-value | Within TAU p-value |
|-----------------------|------------|----------|----------|----------|---------|---------|-----------------------------|------|------|-------------------------|-----------------------|
| | T1 | T2 | T3 | T1 | T2 | T3 | T1 | T2 | T3 | | |
| EA classifications | | | | | | | | | | | |
| Emotionally available | 5 (21%) | 12 (50%) | 13 (54%) | 5 (29%) | 6 (35%) | 9 (53%) | 0.62 | 0.19 | 0.82 | | |
| Complicated | 9 (38%) | 9 (38%) | 9 (38%) | 5 (29%) | 6 (35%) | 6 (35%) | | | | | |
| Detached | 9 (38%) | 3 (12%) | 2 (8%) | 7 (41%) | 5 (29%) | 2 (12%) | | | | | |
| Problematic | 1 (4%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | | | | | |
| Change T1 to T3 | | | | | | | 0.6 | | | 0.007 | 0.070 |
| Positive | 13 (54%) | | | 7 (41%) | | | | | | | |
| Equal | 9 (38%) | | | 9 (53%) | | | | | | | |
| Negative | 2 (8%) | | | 1 (6%) | | | | | | | |

Notes: Change T1 to T3 within groups was analysed with Wilcoxon Signed Rank Test. Comparison between COS-P and TAU was analysed with Mantel-Haenszel Chi2 Test.

TAU group the observed improvement was not significant. Further, parent–infant interaction was assessed as being more emotionally available over time. The positive change between study start and one year after was significant in the COS-P group, but not in the TAU group. Since the study groups are small, results should be interpreted with caution.

Effects of attachment-based interventions

Our results can be related to previous studies reporting positive changes in parents' representations and responsiveness to the child after attachment-based interventions (Huber *et al.*, 2015;

Suchman *et al.*, 2011). The results of these earlier studies indicate that it is possible to enhance high-risk mothers' representations about themselves as parents and their caregiving through intervention. However, previous studies have also shown that parental caregiving representations can improve when they are not exposed to major external stress (Benoit, Zeanah, *et al.*, 1997; Huth-Bocks *et al.*, 2011). Stability and change in parental representations during early childhood may thus be associated with a number of factors, and not only risk factors.

The parents in the present study were of mixed socio-economic background. The majority were married or co-habiting, more than half of them had postgraduate education and the majority reported

that they were not living under financial stress. Infants in both study groups had low levels of psychiatric disturbances. Parental self-rated wellbeing, with all three measures pointing in the same direction, however, indicated that parental mental health was problematic, verging on clinical levels. Parents' low level of wellbeing is assumed to be associated with the fact that they were drawn from a clinical sample; they were aware and motivated to seek help with their caregiving. Still, and with respect to their mental health problems, for which they were not providing specific treatment within the project, our results indicate that an attachment-based psycho-educational intervention, such as COS-P, can have positive effects on caregiver representations and interaction quality in samples with mixed socio-economic backgrounds.

Stability and change in caregivers' representations

This study addresses the question whether adding COS-P to an already existing and comprehensive TAU program improves the intervention. More specifically, it aims to determine whether the COS-P program alters caregivers' representations of their infant. According to earlier studies presenting data from pregnancy to early childhood, 70–80% of maternal representations show stability over time, unbalanced representations being more open to change than balanced (Benoit, Parker & Zeanah, 1997; Theran, Levendosky, Bogat & Huth-Bocks, 2005). To our knowledge, only two studies have focused on changes in caregivers' internal representations during early childhood, and the results from these studies are mixed. In the study by Borghini and colleagues (2006), the proportion of balanced representations increased over a 12-month period. The authors discuss the importance of the infants' more developed capacity to signal their needs as they grow older, as well as reduction of perinatal risk factor influences. A study by Niccols, Smith and Benoit (2015), in which the WMCI disrupted coding system was used, reported stability in disrupted parental representations over an 8-month period. However, the results also indicated that mothers with disrupted representations at pre-test were more likely to have stable representations over time, while mothers with non-disrupted representations at pre-test were more open to change after intervention.

The literature suggests that the psychological transition into becoming a parent is a period of intra- and interpersonal development (Stern, 1995). Prenatal representations, based on thoughts of the unborn child being rooted in the parent's own attachment experiences, influence the postnatal representations of the infant (Zeanah & Anders, 1987; see also Benoit, Parker, et al., 1997). According to Stern (1995), inner representations are influenced by affect-loaded interactive experiences, suggesting that not only the inner representations of the unborn but also the emotional confrontation with infant's physiological needs in the caregiving situation creates a new way of parental thinking. In the present study, assessments of parents' representations were conducted at baseline and repeated one year later. It is likely that the parent's experiences of interacting with the child in the daily caregiving had an influence on the development of the parental representations over this period of time.

Caregiver–infant interaction

In the present study, the EA clinical screener was used to indicate which of the four zones would holistically best describe the quality of the parent–infant interaction. The proportion of interactions placed in the lower zones decreased over time in both groups whereas the proportion of interactions in the emotionally available zone increased. There was a movement in both groups towards the emotional available zone, although the change was significant only in the COS-P group.

Watching pre-produced filmed vignettes illustrating variations in parent–infant interaction is an important part of the COS-P program. Group members are encouraged to train their ability to observe and recognize their own infants' emotional and behavioral needs and to reflect on their personal experiences in the group discussions. Even though interaction guidance is included in TAU, the number of “in video” sessions was low during the time of the project and since the number of sessions did not differ between the groups, we assume that the video sessions did not affect the results. The psycho-educational group approach of COS-P seems to have facilitated an integration of the attachment message into caregivers' own interaction with the infant, as observed in the two situations of parent interaction.

Research in a clinical setting

The precondition of doing research in a clinical setting entails practical considerations and compromises which have to be balanced against the need for valid results. Dropouts are to be expected, because families in IMH treatment are vulnerable, but also because many infant families change housing and employment situations. More dropouts were seen in the TAU group, but three of the seven TAU parents who withdrew from the study did in fact continue their treatment. The dropout families were compared with the total sample and did not differ with regard to background factors. Information was not available regarding the families who rejected the study. According to ethical rules, clinicians are not allowed to inquire why individuals reject an invitation to join a study, but spontaneous comments indicated that being videotaped and assessed from the tapes was seen as threatening. To fill in questionnaires and to be repeatedly interviewed and filmed together with the child for assessment might have been too stressful for some families, especially if they had drawn a blank and were not selected for bonus treatment. The majority of the recruited families had already received substantial treatment, given by experienced infant mental health providers before study start. Caregivers in the COS-P group had more treatment before baseline than those in the TAU group. However, the two groups did not differ in either WMCI or EA classifications at baseline, and it is therefore unlikely that treatment prior to intervention should affect the treatment outcome. It was not possible to control for sleeper effects of treatment given before intervention. TAU continued during the COS-P intervention according to predetermined treatment plans. Given the high quality of TAU in itself, adding COS-P was not expected give rise to dramatic effects in this already comprehensive treatment, in contrast to if “no treatment” had been offered to a control group with no clinical support.

Limitations

Several limitations to the study have to be mentioned. Only three infant mental health clinics were included in the project. Practical reasons prevented two clinics that had originally planned to participate from doing so. A larger sample would have been valuable, preferably from different clinics, but this was not possible due to funding time limits. A non-clinical control group could also have contributed data on stability and change in outcome measures during early childhood. The low number of caregivers in the two groups is nonetheless troublesome, as it yields low statistical power, the groups' number being too small to allow for control of confounding background factors. There is a risk that interesting results have been missed and also that some of the results we have presented are merely effects of the small sample size. The difference in mean age between infants in the COS-P and the TAU groups has to be considered. It can be argued that parents in the TAU group, having younger children, had less experience of their children's needs and behavior at baseline. There was an association between infant age and interaction quality at baseline, which can be related to older children's behavior being more expressive, but no association was found between infant age and parents' inner representations at baseline. Since follow-up was undertaken one year after inclusion date, parents in both groups were experienced parents when their representations were re-assessed and the interaction was videotaped. Since parents' representation patterns as well as interaction quality improved over time in both groups, in spite of the children's age differences in the two groups, the results were seen as worth reporting. There is a need for studies based on different samples, and even small studies might contribute to the development of the methodology in the field (Oppenheim, 2012; Vreeswijk *et al.*, 2012).

The WMCI interviews at T1 were conducted, as was collection of all baseline data, before the randomization to TAU or TAU+COS-P. Caregivers were interviewed by different interviewers at T1 and T3. The format of the WMCI interview does not allow probing questions so as to avoid confounding influences. However, the group allocation was not blind at T3 since the second interview is, as suggested by the constructors, excludes questions about pregnancy and delivery. It would have been preferable to have separate coders for T1 and T3 interviews, but reliable coders with knowledge of the Swedish language are scarce. To avoid making mental matches between T1 and T3, the interviews were coded from film, not from meetings in real life, and the interviews were done a year apart, making it harder to factually remember any themes. The blindness of EA codings was secured by using an external research assistant who was blind to all data and therefore not biased in any way.

The proportion of mothers and fathers in our naturalistic study reflects the proportion of mothers and fathers being the primary caregivers in the families. Since the distribution is so uneven, we would have needed a much bigger sample size to compare mothers' and fathers' views of parenting. Most likely there are similarities and differences between parents in their parenting role and also in how each parent responds to an intervention, or an element in an intervention. These differences might be gender-related, but, according to attachment theory (Bowlby, 1988), what

is most important for the child is that the adult, regardless of gender, who identifies himself or herself as the primary caregiver offers the child a secure base.

Strengths

A number of strong points should be mentioned. The fact that the study is naturalistic, with the COS-P intervention added to TAU in a randomized procedure, is a major strength. Results were not dependent upon special conditions during the intervention period, but did reflect the introduction of a new intervention method in a realistic way, adding to an already existing methodology in the daily IMH work. Data from the clinical world describing the reality of diagnostic and intervention work is needed in order to improve IMH tools and measures. In this present study, data from two groups was collected with well-validated measures. Results are based on repeated measures. External raters had no knowledge of the caregivers' personal history or demographic background: they were not working in the clinics and were blind to caregivers' group allocation.

Clinical implications

The use of COS-P in regular IMH treatment is an issue of both clinical and practical value. The COS paradigm is attractive and coherent with the theoretical foundation of the Swedish IMH clinics and easy to combine with already existing intervention methods. Parents' representations and parent-child interaction can be seen as two different ports of entry into the relationship (Stern, 1995), and COS-P seems to work through them both. The results of the present study indicate that COS-P added to TAU has a stronger impact on improving parents' representations of their child as well as the quality of the parent-infant interaction than TAU alone.

Taking into account that children's needs for sensitive caretakers to support their attachment development are universal, cross-cultural aspects on methods for early interventions need to be more deeply discussed. Pre-produced video vignettes, as used in COS-P, reflect the cultural identity and the language of the individuals appearing on film. Considering this, intervention methods using pre-produced video illustrations may benefit from having the material adapted to different contexts. Further discussion is required of how COS-P, as an example of a method being used in many countries, with a more stable research basis could address issues of cultural differences.

To conclude, two of the major treatment objectives in the IMH work are to change parents' internal representations and to increase emotional availability in interactions with the child. COS-P added to TAU in the present study with a clinical sample enhanced both parental representations as measured by WMCI and parental emotional availability as measured by EAS. Thus, the conclusion is that the COS-P enriches the multifaceted work with infants and their parents and is a valuable addition to other forms of IMH interventions.

This work was supported by a grant from The Public Health Agency of Sweden. There are no conflicts of interest to declare. We would like to thank the IMH-clinicians who collected data and the parents and children who participated in this research. We also thank Frida Dahlbäck for coding.

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Received 2 July 2017, accepted 5 November 2017