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Proof of Concept of a Mind-Mindedness Intervention for Mothers Hospitalized for Severe Mental Illness

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Abstract

The efficacy of a single-session video-feedback intervention to facilitate mind-mindedness in mothers (*n*=36) hospitalized for SMI with their infants was assessed. Levels of mind-mindedness (appropriate and non-attuned mind-related comments) pre- and post-intervention were compared with those of a standard care group (*n*=32) and with psychologically well controls (*n*=49). Intervention-group mothers showed a decrease in non-attuned comments and did not differ from controls on appropriate and non-attuned comments post-intervention. Standard care did not affect mind-mindedness. Infant–mother attachment security was assessed in a subset of intervention-group mothers (*n*=9) and a separate group of standard care mothers (*n*=30)at mean age 17.1 months (*SD* = 2.1). Infants whose mothers completed the intervention were more likely to be securely attached and less likely to be classified as insecure-disorganized than those of mothers who received standard care. A single session of video-feedback to facilitate mind-mindedness in mothers with SMI appears to have benefits for mother–infant interaction over the longer term.

Key words: severe mental illness, mind-mindedness, intervention, attachment.

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Mind-mindedness (Meins, 1997) indexes the extent to which caregivers are able to take the intentional stance and interpret infants’ behavior in terms of their underlying internal states. Mind-mindedness is assessed in the first year of life on the basis of the caregiver commenting appropriately on (appropriate mind-related comments) versus misinterpreting (non-attuned mind-related comments) the infant’s internal states (Meins, Fernyhough, Fradley, & Tuckey, 2001; Meins et al., 2012). Longitudinal studies show mind-mindedness as a positive predictor of core aspects of children’s development. Caregivers’ appropriate mind-related comments in the first year of life predict secure attachment (Lundy, 2003; Meins et al., 2001, 2012) superior executive function (Bernier, Whipple, & Carlson, 2010), theory of mind (Laranjo, Bernier, Meins, & Carlson, 2010, 2014; Meins et al., 2002, 2013), and emotion understanding (Centifanti, Meins, & Fernyhough, 2015), and fewer behavioral difficulties in children from low socio-economic status backgrounds (Meins, Centifanti, Fernyhough, & Fishburn, 2013). In contrast, caregivers’ non-attuned mind-related comments are negatively related to children’s early language acquisition and symbolic play (Meins, Fernyhough, Arnott, Leekam, & de Rosnay, 2013). Yet, these findings relate to the way caregivers talk to their infants naturally; one question is whether intervening might change caregivers’ mind-mindedness and whether intervention might translate to important outcomes for the infant-caregiver relationship.

While all of these studies have demonstrated considerable individual differences in caregiver mind-mindedness, previous research has so far shed little light on why some caregivers are more mind-minded than others. Mind-mindedness is unrelated to maternal characteristics such as socioeconomic status (Meins, Fernyhough, Arnott, Turner, & Leekam, 2011), and to infant characteristics such as general cognitive ability (Meins et al., 2001) and temperament (Meins et al., 2011). Meins, Fernyhough, and Harris-Waller (2014) thus argued that mind-mindedness is a quality of relationships rather than being driven by the characteristics of the individual caregiver or child. If mind-mindedness is not driven by caregiver characteristics, then interventions might be effective even if given briefly.

The aim of the present study was to investigate how complex psychological characteristics relate to mind-mindedness, focusing specifically on maternal mental health. In their community sample, Meins et al. (2011) reported that appropriate mind-related comments were unrelated to mothers’ reported depressive symptoms, and while the positive correlation between depressive symptoms and non-attuned mind-related comments was significant, the effect was small. Pawlby et al. (2010) investigated the relation between mind-mindedness and mental health in a sample of mothers who were hospitalized for a range of severe mental illnesses (SMI). Mind-mindedness was assessed from infant–mother interactions both on admission and discharge. The diagnostic groups (depression, schizophrenia, mania) did not differ in mind-mindedness. Moreover, no statistically significant differences with psychologically well controls emerged, although there was a trend for depressed mothers to be less likely to comment appropriately on their infants’ internal states on admission. Yet, the absence of significant effects when comparing diagnostic groups to controls was unexpected. Pawlby et al. had hypothesized that the social withdrawal, impaired concentration, low mood, and fatigue associated with clinical depression would impair mothers’ mind-mindedness, as would the theory of mind deficits associated with schizophrenia (Brüne, 2005).

Although Pawlby et al.’s (2010) study found no significant differences between the individual diagnostic groups and psychologically well mothers, no analyses were conducted comparing psychologically well mothers with those in the diagnostic groups combined. Calculating the overall means for appropriate mind-related comments (2.67) and non-attuned mind-related comments (0.98) in mothers with SMI shows that both are noticeably lower than those from the psychologically well controls (5.34 and 2.37 respectively). This suggests that the mothers with SMI in Pawlby et al.’s study rarely talked about their infants’ internal states.

The aim of the present study was to investigate mind-mindedness in mothers hospitalized for SMI and to design and evaluate an intervention to facilitate their mind-mindedness. We chose to deliver the intervention using video-feedback, whereby mothers are filmed interacting with their infants, and later review the interaction with a clinician. Video-feedback interventions generally take two approaches, either individually or in combination, with the aim to (a) increase behavioral parental sensitivity (e.g., Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2008), or (b) change parents’ negative or distorted internal representations of their children (e.g., Schechter et al., 2006). Fukkink’s (2008) meta-analysis showed that both approaches are equally effective in improving parental sensitivity and increasing positive perceptions of parenting, often within a period of a few months.

We explored whether a video-feedback intervention that targeted mind-mindedness would be viable and effective for treating mothers hospitalized for SMI. In designing the intervention, we focused solely on the mother’s interpretation of the infant’s experience, rather than encouraging mothers to reflect on their own behavior and feelings toward their infants. We reasoned that such reflections might overwhelm the attentional and emotional capacities of mothers who are currently experiencing an episode of SMI while endeavouring to care for a young infant. Moreover, encouraging a mother to think about her own caregiving behaviors may have the unintended consequence of diverting attention from the infant and decreasing her self-confidence.

An important aim was to demonstrate the efficacy of the intervention under normal working practices, being delivered by the health professionals who cared for the women hospitalized for SMI. This objective thus influenced the study’s design. In the United Kingdom, women suffering from SMI in the first year post-partum can be admitted to a specialized residential mother-and-baby unit (MBU) with their infants. The MBU provides the mothers with inpatient treatment and supports them in caring for their infants. Adopting a randomized controlled trial design to deliver the intervention would not have been ideal. If the study were conducted in a single MBU with the same staff delivering both the standard care and intervention procedures, there was a risk of contamination between the procedures. Moreover, mothers receiving standard care and the intervention would be resident together on the same ward, further raising the risk of contamination. Conducting the study using different MBUs, with some units delivering the intervention and others delivering standard care, would avoid contamination but pose different problems that we wanted to avoid. The characteristics of the staff delivering the intervention could not be held constant across the intervention and standard care groups if different MBUs were used. In addition, MBUs differ in size, location, and the demographics of the populations served. For these reasons, we chose to conduct the study in a single MBU, administering the standard care and intervention procedures to different cohorts over non-overlapping blocks of time.

A further aim was to investigate attachment security in the mothers and infants who had completed the mind-mindedness intervention. Attachment is usually empirically assessed in infants aged 1 to 2 years using the strange situation procedure, which assigns infants to one of four categories: secure, insecure-avoidant, insecure-resistant, and insecure-disorganized (Ainsworth, Blehar, Waters, & Wall, 1978; Main & Solomon, 1986, 1990). Following these mothers and infants up in the second year of life to assess attachment security provides a crucial test of the intervention’s efficacy over the longer term. If infants whose mothers received the mind-mindedness intervention were found to be more likely to be securely attached than infants of mothers who had received standard care for their SMI, this would provide convincing evidence for the sustained positive impact of the intervention on the mother–infant relationship.

Assessing infant–mother attachment also enabled us to explore how maternal SMI relates to attachment security. A considerable body of literature has reported on relations between maternal depression and infant–mother attachment security. Clinical levels of maternal ante- and post-natal depression have shown associations with elevated rates of insecure and disorganized attachment (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Research further suggests that the chronicity rather than the severity of depression is more influential in determining attachment security, with higher rates of insecure attachment found in children of chronically depressed mothers compared with those whose mothers were briefly or never depressed (McMahon, Barnett, Kowalenko, & Tennant, 2006).

Compared with depression, there is relatively little research on infant–mother attachment in relation to other forms of perinatal mental illness. D’Angelo (1986) found elevated rates of insecure attachment, particularly avoidant attachment, in infants of mothers with schizophrenia, but this study included only 15 mothers with schizophrenia. DeMulder and Radke-Yarrow (1991) studied attachment in 24 dyads where the mother suffered from bipolar disorder. Two-thirds of these infants were classified as insecure, with the majority of these insecure attachments being disorganised; 50% of infants were classified as disorganized. By contrast, Hipwell, Goossens, Melhuish, and Kumar’s (2000) study found that only one of the 10 infants of mothers with bipolar disorder was insecurely attached, falling into the disorganized category. Given the very small numbers in these studies, it is difficult to draw firm conclusions about the relation between maternal SMI other than unipolar depression and infant–mother attachment security. Our follow-up study therefore adds to the small literature on relations between maternal non-depressive SMI and infant­–mother attachment security.

In summary, we aimed: (a) to clarify the relation between SMI and mind-mindedness in a sample of mothers hospitalized with their infants in the first year postpartum, (b) to test the feasibility and effectiveness of a video-feedback intervention to increase mind-mindedness compared against standard hospital care, (c) to investigate whether participating in the intervention was related to higher levels of secure attachment compared with standard care, and (d) to explore relations between the nature of the maternal SMI and infant–mother attachment security. If the intervention proved successful in facilitating mind-mindedness, one should observe (i) an increase in appropriate mind-related comments and (ii) a decrease in non-attuned mind-related comments from pre- to post-intervention. If the intervention proved more successful than standard care in facilitating mind-mindedness, one should also see greater improvements in mind-mindedness in the intervention group than in the standard care group. An assessment of behavioral sensitivity was included to establish whether any observed changes in mind-mindedness were independent of changes in sensitivity.

Intervention Study

Method

Participants

Participants were 68 mothers who had experienced an episode of SMI following childbirth and had been admitted to a mother-and-baby unit (MBU) with their infants. Participants were divided into two groups: an intervention group (*n*=36) who received a video-feedback intervention focused specifically on increasing mind-mindedness; and a standard care group (*n*=32) who had previously received a video-feedback intervention broadly focused on increasing maternal sensitivity and confidence. The standard care group consisted of a sub-sample of the mothers with SMI who participated in Pawlby et al.’s (2010) study, selected to have the same or similar diagnoses to those in our mind-mindedness intervention group. The standard care group women were admitted to the MBU between April 2000 and July 2002. Women in the mind-mindedness intervention group were admitted between February 2013 and March 2014.

The standard care group did not receive their intervention at the same time as the intervention group, since they participated prior to the development of the mind-mindedness intervention. Thus, random assignment was not possible. This blocked administration design ensured that there was no possibility of the mind-mindedness intervention techniques contaminating the standard care procedure, given that the sole developmental psychologist employed on the MBU delivered both the intervention and standard care procedures. A control group was created using data from 49 psychologically healthy mothers who had participated in the Pawlby et al. (2010) study.

Women in the clinical groups were ethnically, culturally, and socioeconomically diverse, reflecting the population the MBU served. In the intervention group, 59% of mothers were White, mean age was 33 years (range 23–40, *SD*=5.10), 23% were single, 55% of infants were girls, 59% were first-born, and mean infant age at time 1 was 13 weeks (range 3–33 weeks, *SD*=8.2). In the standard care group, 66% were White, mean age was 31 years (range 19–45, *SD*=6.80), 13% were single, 31% of infants were girls, 53% were first-born, and mean infant age at time 1 was 11 weeks (range 2–36 weeks, *SD*=8.3). Table 1 shows participants’ diagnoses and mental health information.

Ethical approval for the use of the videotaped interactions for research purposes was obtained from the NRES Committee London – Camberwell St. Giles (REC No: 08/H0807/14), and all procedures were carried out in accordance with British Psychological Ethical guidelines. All mothers who were judged by staff to be well enough were invited to participate in the video-feedback interventions but could decline the invitation. Prior to being filmed, all mothers gave verbal consent to participate in video-feedback and provided informed written consent for the recordings of their interactions to be used for research purposes. Participants were aware they could request termination of recording or data to be destroyed. They were also informed that participation in or withdrawal from the video-feedback intervention would not impact on their treatment. Ethical approval for including control participants was gained from the relevant university ethics committees, and control participants gave informed consent for participation when they attended the testing session.

Materials and Methods

Participants were resident on a 13-bedded, publicly funded MBU which provides inpatient treatment for mothers experiencing SMI in the first year post-partum and supports them in caring for their infants. Mothers are admitted on an informal (voluntary) basis, or by sectioning under the Mental Health Act (2007). On admission, mothers are assessed and given an ICD-10 diagnosis by a psychiatrist, and a care plan is developed to help manage any risk posed by the mother to the infant. While resident on the MBU, mothers are provided with a range of multidisciplinary support to help them recover and provide appropriate care for their infants.

Mothers are discharged from the unit when psychiatric assessments and clinicians involved in their care have confirmed mothers are not a risk to their infants and are well enough to return home under the care of a community psychiatric team. In rare cases, mothers who do not recover sufficiently to care for their infants safely are discharged to their homes independently, while their infants are placed in alternative care (foster care or with relatives).

In the first week after admission to the unit, or as soon as they were well enough to give informed consent, mothers in the intervention and standard care groups were filmed for three minutes while engaging in unstructured play with their infants. Infants were seated in a baby seat with their mothers facing them, and a mirror was angled so that the camera simultaneously captured both mother and infant faces. Prior to discharge from the unit, mothers and infants were again filmed in a session of unstructured play identical to the admission session. Mothers in the control group were observed once in an identical interaction when their infants were 12 weeks of age.

At a later date during the admission period, the mothers in the intervention and standard care groups were invited to review their admission video with the developmental psychologist on the unit. The standard care and mind-mindedness video-feedback reviews generally lasted about 20 minutes for each mother. The content of the feedback session for the intervention and standard care groups is outlined below.

Intervention group.The feedback for the intervention group focused on increasing appropriate mind-related comments by directing mothers’ attention to what their infants might be thinking, feeling, wanting, or experiencing in particular moments in the interaction. The intervention feedback also sought to lower the number of non-attuned mind-related comments: the psychologist offered an alternative perspective on the infant’s internal states if she believed the mother had misinterpreted them.

The psychologist was trained in identifying and coding mind-related comments (see below); thus, she selected appropriate moments from the video observation that were most useful to draw attention to in the mind-mindedness intervention. The psychologist viewed the admission observation in advance of the intervention session and selected three moments that would be the focus of the feedback session. These moments were points at which (a) the infant shifted his/her attention or focus of interest, (b) there was a state change (e.g., from smiling to crying), (c) the mother made a mind-related comment (appropriate or non-attuned), or (d) the psychologist felt there was a ‘missed’ opportunity for the mother to comment on the infant’s mental state. In the intervention session, the psychologist paused the film at each of the three moments and asked the mother to think about the infant’s desires, cognitions, emotions, or epistemic states. The psychologist used a scripted protocol during the intervention. All mothers were asked: (a) “What is your baby thinking here?”, and (b) “What do you think your baby would be saying to you right now if s/he could talk?” Mothers were also asked additional questions that were tailored to the content of the particular interaction (e.g., “Is he interested in the song you’re singing?”, “What do you think his crying means about how he’s feeling?”). If the psychologist disagreed with the mother’s interpretation of the infant’s mental state, this was discussed further; she offered her own ideas about the infant’s thoughts and feelings and tried to arrive at a shared agreement with the mother. After all three moments had been discussed, the psychologist asked each mother to talk about a time outside the filmed interaction when she felt she had “tuned in” to what her infant was thinking or feeling, and a time when she felt she had misread her infant’s thoughts or feelings. Mothers were encouraged to practice what they had learned during the session: taking the child’s perspective and talking to their child about their thoughts or feelings.

Standard care group.For mothers in the standard care group, the filmed interaction was reviewed in the manner described above: the psychologist chose various points of interest at which to stop and review the interaction with the mother. The feedback in the standard care sessions focused on increasing mothers’ understanding of infant behavior and their own self-confidence. During the feedback session, mothers were helped to recognize their infant’s various behavioral cues (e.g., gaze direction, vocalization, gesture) and to notice when things seemed to be working well in the interaction. Mothers were encouraged to see the interaction as a ‘conversation’ with their infants, and to practice ‘turn taking’, leaving space for their infants to respond verbally to the mother’s vocalizations. The feedback session for the standard care group also focused on increasing maternal confidence by praising mothers for the skills and strengths demonstrated in interactions with their infants.

Mind-mindedness. Each interaction was transcribed verbatim and coded for mind-mindedness using procedures outlined by Meins and Fernyhough (2015). We identified maternal comments which contained a mental state term that referred to the infant’s thoughts, experiences, or feelings, or where the caregiver spoke on the infant’s behalf (mind-related comments). Each mind-related comment was then classified as appropriate or non-attuned. A comment was appropriate if (a) the coder agreed with the mother’s interpretation of the infant’s mental state, (b) the comment linked the infant’s current activity with past or future experiences, (c) the comment attempted to clarify how the infant wanted to proceed after a lull in the interaction, or (d) the mother voiced what the infant might say if s/he could speak.

Mind-related comments were classified as non-attuned if (a) the coder disagreed with the mother’s interpretation of the infant’s mental state, (b) the comment referred to the infant’s thoughts or feelings about a past or future event unrelated to his/her current activity, (c) the mother suggested the infant wanted to become involved in a new activity when s/he was already engaged in something else, (d) the comment appeared to be a projection of the mother’s own internal state onto the infant, or (e) the referent of the comment was not clear. Scores for both appropriate and non-attuned comments were calculated as a proportion of the total number of maternal comments made during the interaction.

The observations for the standard care and control groups were coded by two trained raters who were unaware of the study’s hypotheses, that some mothers were hospitalized for SMI, and whether the observations were made on admission or discharge. A randomly selected 20% of observations was coded for a second time; inter-rater reliability for coding mind-related comments as appropriate or non-attuned was  = .80. The intervention group observations were coded by a third rater who was blind to whether the observations were on admission or discharge, with a fourth blind rater coding a randomly selected 20% of observations; inter-rater reliability was  = .82.

CARE-Index*.* The CARE-Index assesses dyadic interaction and affective attunement between mothers and infants (Crittenden, 2004). It focuses on seven aspects of behavior within the dyad: facial and verbal expressions, body contact, affection, turn-taking, control, and developmental appropriateness of the activity.

Maternal behavior was rated on the sensitivity scale, with scores ranging from 0–14: zero denoted severe problems, 7 denoted behavior within a normal range, and 14 denoted maternal behavior that was outstandingly sensitive (Crittenden, 2005). The index has been used in previous research as an outcome measure for parent–infant psychotherapy (Cramer, Robert-Tissot, Stern, & Serpa-Rusconi, 1990).

The individual who conducted the CARE-Index coding was not involved in coding mind-mindedness. Note that the CARE-Index was used to code only the standard care and intervention group interactions.

Data Analysis

We tested differences between the groups in sensitivity and mind-mindedness at admission and discharge using a series of analyses of variance (ANOVAs). This was done including the control, standard care, and intervention groups. Additionally, we tested the change from admission levels to discharge levels only within the intervention and standard care groups (between-groups); this was done with repeated-measures ANOVAs with two levels (admission and discharge) of the within-groups effects.

We tested effects using standard methods investigating the rejection of the null model by examining p-values below .05. We also used Bayes as an estimator using JASP 0.7.5 Beta 2 (REF). One advantage to using Bayes estimators is they are less susceptible to variations based on sample size – either extremely large or small. We present Bayesian statistics in a different way to standard frequentist statistics. That is, one reports the strength of the evidence for either the null model (here specified as no effect) or for the alternative model (i.e., that the groups differ). Values over 3 were taken as substantial evidence that no effect existed and values under 1/3 were taken as substantial evidence that the groups differed. Values between 1/3 and 3 were taken as equivocal and not in favor of either model.

Results

Descriptive Statistics and Preliminary Analyses

Of the 36 women who participated in the mind-mindedness intervention, 10 were discharged from the unit before outcome interactions could be filmed, and four women spoke to their infants in languages for which there was no readily available translation. Data for these 14 women were excluded from the analyses.

There were no differences between the intervention and standard care groups in terms of maternal age, *t*(52) = 1.13, *p* =.264, infant age on admission, *t*(52) = 0.83, *p* =.412, maternal ethnicity, 2(1) *=* 3.98, *p* =.553, infant parity, *t*(52) = .49, *p* =.624, mothers’ marital status, 2(1) = 2.22, *p* =.330, or infant gender, 2(1) = 1.24, *p* =.265. The intervention and standard care groups did not differ in duration of stay on the MBU *t*(52) = 0.67, *p* =.674, or previous psychiatric admissions, 2(1) = 0.90, *p* = .344 (see Table 1).

CARE-Index data were not available on admission for one mother in the standard care group, because the infant was born prematurely; the CARE-Index is not appropriate for coding interactions with premature infants (Crittenden, 2004).

Two mothers in the standard care group were discharged from the unit without their infants; one infant was discharged to statutory care and one infant was discharged to the father’s care. No mothers in the intervention group were discharged without their infants.

Mind-Mindedness in Clinical versus Control Groups on Admission

Differences in mind-mindedness between the standard care and intervention groups on admission and the control group (note the control group was observed only once) were investigated using a one-way ANOVA. With appropriate mind-related comments as the dependent variable, there was a main effect of group, *F*(2, 102) = 3.73, *p* = .027,2 = .069; post hoc pairwise comparisons showed that the standard care group mothers made fewer appropriate comments compared with control group mothers (*p* = .028). A Bayesian ANOVA showed that the results for the three intervention groups were equivocal (B01=0.49). This would indicate that the significant finding using frequentist statistics may not be reliable. No other pairwise comparisons were significant.

There was also a main effect of group for non-attuned mind-related comments, *F*(2, 102) = 21.25, *p* < .001, 2 = .298; post hoc pairwise comparisons showed that intervention group mothers made more non-attuned comments compared with mothers in both the standard care and control groups (*p*s < .001). The Bayesian ANOVA showed decisive evidence for the difference of non-attuned mind-related comments among the groups (B01<0.00001) No other pairwise comparisons were significant. Thus, it appears non-attuned mind-related comments, but not necessarily appropriate comments, demarcated mothers in the intervention group.

Mind-Mindedness in Clinical versus Control Groups on Discharge

Differences in mind-mindedness between the standard care and intervention groups on discharge and the control group were investigated using a one-way ANOVA. There was a marginally significant main effect of group for appropriate mind-related comments, *F*(2, 102) = 2.69, *p* = .073, 2 = .051; post hoc pairwise comparisons showed that mothers in the intervention group made marginally more appropriate mind-related comments compared with mothers in the standard care group (*p* = .089). Yet the Bayesian ANOVA showed that the results were equivocal (B01=1.27). No pairwise comparisons were significant.

There was a main effect of group for non-attuned mind-related comments, *F*(2, 102) = 4.28, *p* = .017, 2 = .079; post hoc pairwise comparisons showed that mothers in the standard care group made fewer non-attuned comments compared with mothers in the intervention group (*p* = .024), and also made marginally fewer non-attuned comments compared with the mothers in the control group (*p* = .052). Again, the Bayesian ANOVA showed the results were equivocal (B01=0.37). No other pairwise comparisons were significant. These results suggest no difference among the groups on discharge, particularly if we interpret the findings using Bayesian statistics.

Change in Sensitivity from Admission to Discharge

Change in maternal sensitivity between admission and discharge was investigated using a repeated measures ANOVA with sensitivity scores at admission and discharge entered as the dependent variables and group (standard care, intervention) entered as a fixed variable. There was an overall increase in sensitivity scores between admission and discharge, *F*(1, 51) = 15.15, *p* <.001, 2 =.297, a main effect of group, *F*(1, 51) = 5.51, *p* =.023, 2 =.108, andno interaction between group and time, *F*(1, 51) = 2.61, *p* =.352, 2 =.017. Bayesian repeated-measures ANOVA showed the results supported strong evidence for an overall increase in sensitivity between admission and discharge (B01=0.02). There was equivocal evidence for differences between the standard care and intervention group (B01=0.50). The interaction effect showed equivocal evidence for the intervention to moderate the change in sensitivity.

Change in Mind-Mindedness from Admission to Discharge

Change in appropriate mind-related comments was investigated using a repeated measures ANCOVA entering scores for appropriate mind-related comments at admission and discharge as the dependent variables, group (standard care, intervention) as a fixed variable, and sensitivity scores on admission and discharge as control variables. Appropriate mind-related comments did not change overall between admission and discharge, *F*(1, 49) = 0.74, *p* =.395, there was no main effect of group, *F*(1, 49) = 2.64, *p* =.111, and no interaction between group and time, *F*(1, 49) = 1.56, *p* =.215. The Bayesian repeated-measures ANOVA showed equivocal evidence for all effects.

Change in non-attuned mind-related comments was investigated using a repeated measures ANCOVA entering scores for non-attuned mind-related comments at admission and discharge as the dependent variables, group (standard care, intervention) as a fixed variable, and sensitivity scores on admission and discharge as control variables. There was no overall change in non-attuned comments between admission and discharge, *F*(1, 49) = 0.13, *p* =.717, 2 =.260, but there was a main effect of group, *F*(1, 49) = 33.73, *p* <.001, 2 =.451, and an interaction between group and time, *F*(1, 49) = 8.80, *p* =.005, 2 =.451. The Bayesian repeated-measures ANOVA analysis shows substantial evidence for change in non-attuned mind-related comments across time (B01=0.05), decisive evidence for group differences (B01<0.001), and decisive evidence for the model including the interaction (B01<0.0000001). The interaction is shown in Figure 1.

Post-hoc paired samples t tests showed that non-attuned mind-related comments decreased between admission and discharge in the intervention group, *t*(21) = 3.95, *p* = .001, *d* = 1.15, and the Bayesian paired-samples t-test showed that the results suggested strong evidence for the decrease (B01=.02). However, the change was non-significant in the standard care group, *t*(31) = 0.73, *p* = .473, *d* = .21, and the Bayesian paired-samples t-test showed equivocal evidence for a reduction for this group (B01=2.74).

Follow-up Study

Participants

Participants for this study were mother-infant pairs who had been admitted to an inpatient MBU during the first year post-partum, who had participated in video-feedback sessions during their treatment, and who had given consent to be contacted for research purposes following discharge. In the period covered by this study (2009–2014), a total of 117 (36 intervention group, 81 standard care group) mothers participated in video-feedback sessions on the MBU. All mothers provided informed consent for the filmed observations to be used for research purposes, and 86 (74%) of these mothers gave permission to be contacted for a future follow-up study prior to their discharge. In 26 of the 31 cases where consent for future contact was not obtained, the reason was because the mothers had been discharged from the MBU before they could be asked about future research contact. Of the remaining five cases, two mothers stated they did not want to participate in future research, and three mothers were discharged without full care of their infants.

When the 86 mothers were contacted for the present study at 15 months post-partum, 49 (57%) agreed to participate, 9 (10%) agreed although then proved impossible to schedule for an assessment, 15 (17%) declined, 11 (13%) could not be located, and 2 mothers (2%) no longer had care of their children. Both mothers who had lost custody of their children were in the standard care group. Ten of the mothers who participated in the follow-up assessment had substantial portions of missing data and were therefore excluded. Being in the intervention group was not related to participation in follow-up: 9 out of 36 intervention mothers versus 30 out of 81 standard care mothers, 2(1) = 1.13, *p* = .225.

The remaining 39 mothers who completed the follow-up had a mean age of 33.84 years (range 18–43 years; *SD* 5.04) at follow-up. Twenty-two (56.4%) were White, 12 (30.8%) were Black, and five (12.8%) were Asian. On average, their infants were 2.7 months when their mothers were admitted to the MBU (range 1 day–10 months; *SD* 3.5 months), and 17.1 months old (range 15–23 months; *SD* = 2.1) at the follow-up assessment. Twenty-one infants (53.3%) were female and 24 (61.5%) were first-born.

There were no differences between the 39 mothers who completed the follow-up assessment and the remaining 78 mothers who did not participate with regard to length of admission, unit diagnosis, mother’s age at admission, mothers’ ethnicity, infant age at admission, or infant gender. There was a difference between the two groups in terms of admission type. Mothers who did not complete the follow-up assessment were more likely to have been admitted to the MBU on an informal (voluntary) basis and less likely to have been admitted by mental health section than the 39 mothers who completed the follow-up,2(1) = 7.36, *p* = .025.

At the follow-up assessment, 12 mothers (30.8%) were single, 6 (15.4%) were cohabiting or in a long-term relationship, and 21 (53.8%) were married. Two mothers (5.1%) had no formal educational qualifications, 9 (23.1%) were educated to GCSE level, two (5.1%) had completed ‘A’ levels, three (7.7%) had completed vocational qualifications, and 23 (59.0%) had completed a university degree or higher; educational attainment was scored between 0 (no formal qualifications) to 5 (university degree or higher). At the time of the follow-up assessment, 16 mothers (41.0%) were employed, two (5.1%) were full-time students, and 21 (53.8%) were not working.

Regarding their mental health, 27 (69.2%) of the mothers participating in the follow-up assessment had a history of mental health difficulties prior to their pregnancy, and 16 of these mothers (41%) had experienced one or more psychiatric hospital admissions prior to their admission to the MBU. Their mean length of stay on the unit was 11.95 weeks (range = 4–25 weeks; *SD* = 5.4).

Nine of the 39 mothers who participated in the follow-up assessment had received the mind-mindedness video feedback intervention; the remaining 30 mothers had received standard care (see Intervention Study above). Mothers in the standard care group had been resident on the MBU between October 2009 and January 2013; intervention group mothers were resident on the MBU between February 2013 and March 2014. Mothers were given a diagnosis on discharge from the MBU. Given the small numbers participating in the present study, diagnoses were collapsed into three broad categories: mood disorders (major depressive disorder with and without psychosis; obsessive compulsive disorder; mixed anxiety and depressive disorder); psychotic disorders (schizophrenia; schizoaffective disorder; post-partum psychosis); and bipolar illness (bipolar disorder with and without psychosis; manic episode associated with the puerperium). In the standard care group, 12 mothers were diagnosed with a mood disorder, 9 were diagnosed with a psychotic disorder, and 9 with a bipolar illness. In the intervention group, 7 were diagnosed with mood disorders, 1 with a psychotic disorder, and 1 with a bipolar illness. Intervention group mothers who participated at follow-up did not differ from those who were lost to the study with respect to appropriate or non-attuned mind-related comments (*t*s < 1.51, *p*s >.148).

Full ethical approval was granted by the relevant research ethics committees and conducted in line with ethical guidelines as described in the Intervention Study above. Informed consent was obtained for the video recordings to be made and used for the purposes of research. Mothers were informed that they could withdraw from the study at any time without giving a reason, and without implications for any treatment they may have been receiving. Mothers were not provided with any incentive to participate in this study apart from reimbursement of their travel expenses to and from the MBU for the follow-up assessment.

Materials and Methods

Mothers in the intervention and standard care groups participated in the associated video-feedback session described above while resident on the MBU (see Intervention Study). Although all mothers were filmed shortly after admission and completed the video-feedback session as described above, standard care group mothers were not required to complete a filmed face-to-face interaction on discharge, and only 14 did so.

When infants were 15 months old, mothers who had given consent to be contacted for research purposes post-discharge were invited to participate in the follow-up assessment by post and a subsequent telephone call. This time point was chosen for the assessment to give mothers and infants some time to settle back into their home routine following their hospitalization, as some mothers had been resident on the MBU up to the time their infants were 12 months old. In the telephone call, mothers were told that the purpose of the study was to assess maternal well-being since leaving the unit, and children’s reactions to their mother leaving them briefly with a stranger or leaving them alone.

The follow-up assessment was completed at the MBU, as it was both a centrally convenient location for most participants, and because it had camera rooms appropriate for administration of the strange situation procedure to assess attachment. At the assessment, mothers confirmed basic demographic details and provided information about current medication and mental health treatment.

Clinician-Rated Mental Health. A qualified clinical psychologist interviewed mothers using the Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Patient Edition (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) to assess mental health since discharge. Mothers were given a diagnosis, and diagnoses were then collapsed into three broad categories: mood disorders (major depressive disorder with and without psychosis; obsessive compulsive disorder; mixed anxiety and depressive disorder); psychotic disorders (schizophrenia; schizoaffective disorder; post-partum psychosis); and bipolar illness (bipolar disorder with and without psychosis; manic episode associated with the puerperium).

The clinical psychologist used information from the SCID-I and observations of mothers’ behavior during the assessment to rate current maternal mental health on the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962). The BPRS rates 16 psychiatric symptoms on a 7-point scale ranging from “not present” to “extremely severe”. Possible scores range between 16 and 112, with higher scores indicating more severe psychiatric illness.

Life Events Experienced Since Discharge. Mothers also completed the Life Events Questionnaire (LEQ; Norbeck, 1984; Sarason, Johnson, & Siegel, 1978) in order to account for any additional stressful experiences post-discharge from the MBU. The LEQ is an 82-item questionnaire covering life events in 11 different areas (e.g., health, work, love and marriage, financial). Participants first note which of the listed events they have experienced, indicate whether the event was “good” or “bad”, and then rate each experienced event on a 4-point scale denoting the amount of impact the event had on the participant’s life: “no effect” (scored 0) to “great effect” (scored 3). The scored for the “bad” events were summed to give a score for negative life events.

Infant–Mother Attachment Security. After a short break, mother–infant attachment security was assessed using the strange situation procedure (Ainsworth et al., 1978). Infants were classified into one of four categories: secure, insecure-avoidant, insecure-resistant, insecure-disorganized (Ainsworth et al., 1978; Main & Solomon, 1986, 1990). All of the strange situations from the intervention group were double coded, and 16 of the 30 standard care group strange situations were double coded. One of the trained and reliable coders was blind to the hypotheses of the study, the nature of the sample, and all other measures. The second trained and reliable researcher was blind to participants’ group status (intervention or standard care). Inter-rater reliability using the four-way classification system was κ = .85, and a consensus was reached on all disagreements.

Data Analysis

We tested differences in attachment security and organization between the standard care and intervention groups using chi-square and categorizing attachment as dichotomous (secure vs insecure and organized vs disorganized). We again used Bayes as an estimator using JASP 0.7.5 Beta 2 (REF) to show the strength of the evidence for one model over the alternative, similar to Study 1.

Results

Descriptive Statistics and Preliminary Analyses

Twenty-four mothers experienced enduring symptoms of their mental illnesses between their discharge from the MBU and the follow-up assessment, while fifteen women had made a full recovery post-discharge. Sixteen mothers were still unwell at the date of the follow-up assessment; two of these mothers had had further admissions to a psychiatric unit.

In the sample as a whole, 12 infants (31%) were classified as securely attached, 4 (10%) were classified as insecure-avoidant, and 23 (59%) as insecure-disorganized (forced classifications: 9 secure; 12 avoidant; 2 resistant). This distribution can be compared against van IJzendoorn et al.’s (1999) meta-analytic data for non-clinical, middle-class samples: 61% secure, 15% insecure-avoidant, 9% insecure-resistant, 15% insecure-disorganized. Due to the small sample size, infants were classified into two separate dichotomous categories: secure versus insecure attachment; disorganized versus organized (secure and avoidant) attachment.

Dichotomous secure/insecure attachment was unrelated to (a) infant age at admission to the MBU (secure *M* = 2.27, *SD* = 2.72; insecure *M* = 2.82, *SD* = 3.77), *t*(37) = 0.44, *p* = .498, (b) maternal age at admission (secure *M* = 33.36, *SD* = 6.33; insecure *M* = 32.18, *SD* = 4.20), and (c) length of inpatient stay (secure *M* = 9.82, *SD* = 4.54; insecure *M* = 12.79, *SD* = 5.57), *t*(37) = 1.57, *p* = .125. With respect to length of stay, the range was between 6 and 23 weeks for mothers of infants classified secure, and between 4 and 25 weeks for mothers of infants classified insecure.

Dichotomous organized/disorganized attachment was unrelated to (a) infant age at admission to the MBU (organized *M* = 1.92, *SD* = 2.63; disorganized *M* = 3.04, *SD* = 3.83), *t*(37) = 0.94, *p* = .352, (b) maternal age at admission (organized *M* = 33.15, *SD* = 5.86; disorganized *M* = 32.19, *SD* = 4.33), and (c) length of inpatient stay (organized *M* = 10.46, *SD* = 4.72; disorganized *M* = 12.69, *SD* = 5.67), *t*(37) = 1.22, *p* = .230.

Maternal Mental Health in the Intervention and Standard Care Groups

The data on admission to the MBU and mothers’ self-reported psychiatric symptoms and distressing life events since discharge for the intervention and standard care groups are shown in Table 3. Intervention and standard care group mothers did not differ with respect to maternal age, *t*(37) = 0.65, *p* = .517, *d*=-1.51, length of inpatient stay on the MBU, *t*(37) = 1.69, *p* = .100, *d*=3.91, maternal education, *t*(37) = 0.08, *p* = .937, *d*=0.19, BPRS scores, *t*(37) = 0.79, *p* = .791, *d*=-0.62, and LEQ scores, *t*(37) = 0.12, *p* = .898, *d*=-0.30; intervention group infants were slightly older when their mothers were admitted to the MBU, *t*(37) = 1.80, *p* = .081, *d*=-4.15. Bayesian t-tests showed that the results for the two intervention groups were equivocal (B01 ranged from 0.99 to 2.81), and there was no strong evidence for any differences. The diagnoses at follow-up for mothers in the intervention and standard care groups are presented in Table 4.

~~Attachment Security and Maternal Mental Health~~

~~Secure/insecure dichotomous attachment was unrelated to (a) mothers’ past experience of mental illness prior to their pregnancy and admission to the MBU, ~~~~2~~~~(1)~~ *~~=~~* ~~0.27,~~ *~~p~~* ~~= .719; (b) one or more previous admissions to a psychiatric inpatient unit prior to their MBU admission, ~~~~2~~~~(1)~~ *~~=~~* ~~0.00,~~ *~~p~~* ~~= 1.000; (c) type of admission (voluntary or by section), ~~~~2~~~~(1)~~ *~~=~~* ~~2.17,~~ *~~p~~* ~~= .163; and (d) length of stay on the MBU,~~ *~~F~~*~~(1, 37) = 1.75,~~ *~~p~~* ~~= .125. Bayesian contingency tables showed equivocal evidence for the two attachment types (range from 1.27 to 1.89).~~

~~Organized/disorganized dichotomous attachment was also unrelated to mothers’ (a) mental illness prior to pregnancy and admission to the MBU, ~~~~2~~~~(1)~~*~~=~~* ~~0.42,~~ *~~p~~* ~~= .726, (b) previous psychiatric admissions, ~~~~2~~~~(1)~~ *~~=~~* ~~0.08,~~ *~~p~~* ~~= 1.00, (c) type of admission, ~~~~2~~~~(1)~~ *~~=~~* ~~1.33,~~ *~~p~~* ~~= .312, and (d) length of stay on the MBU,~~ *~~F~~*~~(1, 37) = .945,~~ *~~p~~* ~~= .337. Bayesian contingency tables showed there was equivocal evidence for any difference based on attachment (range of 1.36 to 1.91; 2.30 for the t-test with length of stay).~~

~~With regard to mothers’ mental health at follow-up, there was no relation between whether mothers were classified as meeting no criteria for diagnosis or continued to suffer from a mental illness and (a) secure/insecure dichotomous attachment, ~~~~2~~~~(1)~~ *~~=~~* ~~2.15,~~ *~~p~~* ~~= .174, and (b) organized/disorganized attachment, ~~~~2~~~~(1)~~ *~~=~~*~~.90,~~ *~~p~~* ~~= .509. Bayesian contingency tables showed equivocal evidence for differences based on secure, B~~~~01~~~~=1.15, or organized attachment, B~~~~01~~~~=1.33. Mothers’ self-reported levels of distress on LEQ items following discharge from the MBU were unrelated to dichotomous secure (~~*~~M~~* ~~= 3.55,~~ *~~SD =~~* ~~2.88) versus insecure (~~*~~M~~* ~~= 3.07,~~ *~~SD =~~* ~~3.58) attachment,~~ *~~F~~*~~(1,37) = .21,~~ *~~p =~~* ~~.646, and dichotomous organized (~~*~~M~~* ~~= 3.23,~~ *~~SD =~~* ~~2.80) versus disorganized (~~*~~M~~* ~~= 3.19,~~ *~~SD =~~* ~~3.67) attachment,~~ *~~F~~*~~(1,37) = .00,~~ *~~p~~* ~~= .979. There were also no differences in the researcher-rated BPRS scores at the follow-up assessment between secure (~~*~~M =~~*  ~~29.75,~~ *~~SD~~*  ~~= 5.40) and insecure group mothers (~~*~~M~~* ~~= 30.63,~~ *~~SD =~~* ~~9.14),~~ *~~t~~*~~(37) = .31,~~ *~~p~~* ~~= .759, or between organized (~~*~~M~~* ~~= 29.75,~~ *~~SD =~~* ~~5.85) and disorganized group mothers (~~*~~M =~~* ~~30.78,~~ *~~SD~~* ~~= 9.47),~~ *~~t~~*~~(37) = .39,~~ *~~p~~* ~~= .701. Bayesian t-tests showed equivocal evidence for difference based on secure attachment (LEQ: B~~~~01~~~~=2.96 & BPRS: B~~~~01~~~~=2.86) and substantial evidence for there being no differences based on organized versus disorganized attachment (LEQ: B~~~~01~~~~=3.07 & BPRS: B~~~~01~~~~=3.09).~~

Attachment and Participation in the Mind-Mindedness Intervention

In the intervention group, classifications were as follows: 6 secure, 3 insecure-disorganized, and no infants were classified as insecure-avoidant or insecure-resistant. In the standard care group, classifications were: 5 secure, 2 insecure-avoidant, 23 insecure-disorganized, and no insecure-resistant.

The numbers of infants falling into the two dichotomous attachment categories are shown in Table 5. Mothers who received the mind-mindedness intervention were more likely to have infants classified as securely attached compared with mothers in the standard care group, 2(1) *=* 8.55, F’s exact *p* = .008. Mothers who received the mind-mindedness intervention were also more likely to have infants whose attachment was organized compared with their standard care counterparts, 2(1) *=* 5.85, F’s exact *p* = .039. Further, there was strong evidence that the mind-mindedness intervention helped more with attachment security and substantial evidence that the mind-mindedness intervention helped more with attachment organization (B01=0.05 & B01=.23, respectively).

Discussion

The present study aimed to investigate how SMI related to mothers’ mind-mindedness, and to test the feasibility and efficacy of a video-feedback intervention for increasing mind-mindedness and facilitating secure infant–mother attachment in mothers hospitalized for SMI. We also attempted to clarify the relation between SMI and maternal mind-mindedness and provide further data on how maternal SMI relates to attachment security. On admission, mothers in the intervention group made more non-attuned mind-related comments relative to mothers in both the standard care and control groups, but did not differ from mothers in the standard care or control groups on appropriate mind-related comments. The elevated level of non-attuned comments in the intervention group is consistent with one pattern predicted for mothers with SMI by Pawlby et al. (2010), who argued that the social and cognitive impairments associated with SMI would be associated with misinterpreting infants’ internal states. The findings for the standard care group are consistent with the second pattern predicted by Pawlby et al.: that SMI would be associated with few appropriate comments about the infant’s mental state. Thus, although these results do not lend themselves to a single characterization of how SMI relates to mind-mindedness, mothers with SMI failed to talk appropriately about their infants’ internal states and/or misread their infants’ thoughts and feelings.

Despite their high levels of non-attuned mind-related comments on admission, by discharge mothers in the intervention group did not differ from psychologically well controls. Non-attuned comments showed a decrease from admission to discharge in the intervention group, but did not change in the standard care group. No change in appropriate mind-related comments was observed in either intervention or standard care groups. However, intervention group mothers did not differ from control mothers on admission or discharge on appropriate mind-related comments, which might explain why the intervention failed to impact this index of mind-mindedness. In addition, levels of sensitivity were higher in the intervention group than in the standard care group at discharge, suggesting that the mind-mindedness intervention was more effective than the standard care procedure in increasing maternal sensitivity, even though sensitivity was not the specific target of the intervention.

Of importance, the standard care procedure was found to be effective in increasing maternal sensitivity. The standard care intervention was designed to facilitate sensitive caregiving by informing mothers about the importance of talking to their infants and interacting in a non-intrusive way. The standard care procedure resulted in an increase in maternal sensitivity from admission to discharge. Thus, although standard care did not impact on maternal mind-mindedness, it was successful in achieving its aim to increase sensitivity. The difference between the intervention and standard care group in relation to mind-mindedness cannot therefore be explained in terms of standard care failing to influence mothers’ interactional behavior with their infants.

It could be argued that the observed improvement in mind-mindedness in the intervention group was due to the fact that mothers in this group were less severely ill than their counterparts in the standard care group. However, women in these groups did not differ in the time spent on the unit—if intervention group mothers had been less severely ill, they should have been discharged significantly earlier than their standard care group counterparts. In addition, the women in the standard care group were selected so that their diagnoses were the same or similar to those of the women in the intervention group. Thus, it was not the case that mothers in the standard care group had diagnoses that were typically associated with longer periods of hospitalization. Finally, the discharge observations were made when both groups were psychiatrically assessed to be well enough to be discharged from the unit. It is worth noting that all mothers who received the mind-mindedness intervention were discharged with their infants, whereas two infants in the standard care group were put into non-maternal care when their mothers were discharged.

Turning to the results from the follow-up study conducted in infants’ second year of life, infant–mother attachment security was unrelated to the specific type of maternal SMI prior to pregnancy, on discharge from the MBU, or at follow-up, and whether mothers had completely recovered from their illness at follow-up. This suggests that maternal SMI has the same association with infant–mother attachment security regardless of the mother’s diagnosis or symptoms, or the specific point in the child’s life that the mother becomes ill.

Unlike mothers’ psychiatric diagnosis, participation in the mind-mindedness intervention was found to relate to infant–mother attachment security. Mothers who had received the mind-mindedness intervention were more likely to have securely attached infants compared with their counterparts in the standard care group. Indeed, the percentage of infants classified as securely attached (67%) is somewhat higher than that reported for non-clinical middle-class samples (62%) in van IJzendoorn et al.’s (1999) meta-analysis. In contrast, only 17% of infants in the standard care group were classified as securely attached. Intervention-group mothers were also less likely to have infants classified as insecure-disorganized compared with their counterparts in the standard care group. However, rates of insecure-disorganized attachment were elevated in both the intervention (33%) and standard care (77%) groups compared with van IJzendoorn et al.’s meta-analytic data for non-clinical middle-class (15%) and maternal depression (19%) samples. The standard care group’s level of disorganization was also higher than that reported by van IJzendoorn et al. for maternal drug and alcohol abuse (43%) and maltreatment (48%). It is worth noting that none of the original 36 intervention-group mothers had lost custody of their infants at follow-up.

The results of the present study show that it is possible to effect an improvement in mind-mindedness in mothers with SMI with only a single session of video-feedback. This is in line with results of Bakermans-Kranenburg, van IJzendoorn, and Juffer’s (2003) meta-analysis which found that interventions with fewer sessions and a clear focus appeared to be more effective than longer interventions for parents with young children. Our results also suggest that brief mother–infant video-feedback focusing on mind-mindedness is a feasible intervention for mothers who are experiencing severe mood disturbances or psychotic symptoms, despite the fact that their symptoms may initially impede mind-mindedness. Moreover, although results at follow-up must be treated with caution due to the low number of participants in the intervention group, they suggest that completing the mind-mindedness intervention has a positive impact on the quality of the mother–infant relationship into the child’s second year of life.

While the results from the intervention group showed that their levels of mind-mindedness did not differ from psychologically well controls when they were discharged from the unit, an important next step is to establish whether the positive effect of the intervention on mind-mindedness in mothers with SMI can be replicated when administered by different health professionals in other settings. For the reasons discussed in the Introduction, a randomized controlled trial design would not be feasible given the current structure of inpatient psychiatric care for mothers with young infants in the United Kingdom. Future research should adopt a partial crossover trial design, whereby the intervention is administered to the standard care group part-way through the study. This would enable the effect of the intervention to be investigated within the same group, as well as allowing for comparisons between intervention and standard care groups.

It is also important to investigate in a larger sample how participation in the mind-mindedness intervention relates to subsequent infant–mother attachment security. In outlining the direction of such future research, potential reasons for mothers declining to participate at follow-up should be considered. First, for practical reasons, the follow-up assessment was conducted at the MBU. Some mothers may have been reluctant to return to the MBU given that it was associated with a particularly difficult time of their lives. Second, it is possible that attrition is due to mothers wishing to draw a line under their hospitalization, resulting in them deciding not to participate in activities that would serve to remind them of their acute psychiatric episode. Mothers who were feeling that they had made good progress when contacted for follow-up may have declined participation for similar reasons. Alternatively, mothers who were still experiencing psychiatric symptoms may have been reticent to take part for fear that participation might result in further hospitalization or risk their relationship with their child. Conducting follow-up assessments in future research at a neutral venue may therefore help to mitigate attrition.

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*Table 1*

Maternal Mental Health and Demographic Details for Intervention and Standard Care Groups

Intervention group Standard care group

(*n*=22) (*n*=32)

–––––––––––––––––––––––––––––––––––––––––––––––––––––––––––––––––––––

Caucasian 12 21

Mean maternal age (years) 33 31

range = 23-40; *SD* = 5.1 range = 19-45; *SD* = 6.8

Marital status single 5 4

First born infant 13 17

Female infant 12 10

Infant age at first video (weeks) 13 11

range 3-33; *SD* = 8.2 range 2-36; *SD* = 8.3

Bipolar affective disorder 2 4

MDD – psychotic and non-psychotic 14 15

OCD 3 1

Post-partum psychosis 1 4

Anxiety 1 1

Schizoaffective disorder 1 2

Schizophrenia 0 1

Personality disorder 0 3

PTSD 0 1

Voluntary admission 17 24

History of mental health difficulties 14 21 (2 unknown)

One or more previous inpatient admissions 4 3

Prescribed psychotropic medication 22 32

Duration of admission (weeks) 11.4 12.2

*Table 2*

Mean (standard deviation) Mind-mindedness and CARE-Index Scores for the Three Groups

Intervention Standard Care Control

­­­­Admission

AMRC (%) 3.13 (4.88) 2.32 (4.03) 5.34 (5.78)

NAMRC (%) 8.00 (5.57) 1.13 (3.03) 2.37 (3.70)

Total comments 54.64 (12.93) 66.91 (35.01) 76.49 (22.15)

CARE-Index sensitivity 4.82 (2.42) 4.10 (1.54) ­–

Discharge

AMRC (%) 6.40 (6.46) 3.06 (3.67) –

NAMRC (%) 2.82 (3.40) 0.68 (1.31) –

Total comments 57.41 (14.65) 82.03 (37.36) –

CARE-Index sensitivity 6.45 (2.48) 5.22 (1.79) –

AMRC = Appropriate mind-related comments; NAMRC = Non-attuned mind-related comments

Table 3

*Mean (SD) Scores for Admission Variables, Clinician-Rated Psychiatric Ratings, and Self-Reported Negative Life Events for Mind-Mindedness Intervention and Standard Care Groups*

Intervention Standard Care

Infant age at admission (months) 4.44 (3.32) 2.13 (3.40)

Maternal age at admission 33.44 (7.09) 32.23 (4.05)

Length of inpatient stay 9.33 (2.35) 12.73 (5.84)

Maternal education 2.89 (1.46) 2.93 (1.46)

British Psychiatric Ratings Scale 31.00 (9.63) 30.17 (7.77)

Life Events Questionnaire 3.33 (3.20) 3.17 (3.47)

Table 4

*Clinician-Rated Maternal Mental Health at Follow-up*

Intervention Standard Care

Full recovery 4 (44%) 11 (37%)

Mood disorder 4 (44%) 9 (30%)

Psychotic disorder 0 5 (17%)

Bipolar illness 1 (11%) 5 (17%)

Table 5

*The Relation between Infant-Mother Secure/Insecure and Organized/Disorganized Attachment and Maternal Participation in the Mind-Mindedness Intervention*

Secure / Insecure Organized / Disorganized

Standard care 5 25 8 22

Mind-mindedness intervention 6 3 6 3

Figure Captions

*Figure 1*

Change in Non-Attuned Mind-Related Comments between Admission and Discharge for Standard Care and Intervention Groups

