The efficacy of toddler–parent psychotherapy to increase attachment security in offspring of depressed mothers

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ABSTRACT The efficacy of toddler–parent psychotherapy (TPP) as a preventive intervention for promoting secure attachment in the offspring of depressed mothers was evaluated, 63 mothers with major depressive disorder being randomly assigned to TPP (n = 27) or to a no treatment group (n = 36) and compared with a control group (n = 45) of women with no current or past mental disorder. At baseline, comparable and higher rates of attachment insecurity were found in the two depressed offspring groups as compared with the non-depressed control group. At the post-treatment follow-up, offspring in the intervention group attained rates of secure attachment that were comparable with those of youngsters in the non-depressed control group. In contrast, the children in the depressed control group continued to demonstrate a greater rate of attachment insecurity than children in the non-depressed control group. The findings support the efficacy of an attachment-theory based model of intervention for fostering developmental competence in the offspring of depressed mothers.

KEYWORDS: toddler – parent psychotherapy – attachment – maternal depressive disorder – intervention efficacy – prevention

The offspring of mothers with depressive disorder are at risk for maladaptation and the subsequent development of psychopathology (Birmaher *et al.*, 1996; Cicchetti & Toth, 1998; Kovacs, 1989, 1996). Early aberrations in the development of a secure attachment relationship in these children likely bode poorly for the development of competence (Cicchetti & Schneider-Rosen, 1986; Cummings & Cicchetti, 1990). The implementation of a preventive intervention to foster secure attachment in these offspring would address questions of both theoretical and clinical significance. In this paper,

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we evaluate the effects of an attachment-theory based preventive intervention using toddler–parent psychotherapy (TPP; Lieberman, 1992) to promote secure attachment in the offspring of depressed mothers.

MATERNAL DEPRESSION AND ATTACHMENT

Children of depressed mothers represent a population at risk for the development of insecure attachment relationships due to the increased likelihood that these youngsters will have experienced maternal physical and psychological unavailability (Cummings & Cicchetti, 1990). Bowlby ([1969]1982; 1973, 1980) argued that, when confronted with separation from the primary caregiver, children experience anxiety. During periods of prolonged or sustained loss, including the occurrence of parental psychological unavailability, so Bowlby maintained, the development of a secure internal working model of the caregiver would be impeded. In fact, insecure attachment during the early years of life has been consistently associated with unresponsive, insensitive and rejecting parenting (see DeWolff & van IJzendoorn, 1997; and Teti & Nakagawa, 1990, for reviews). Offspring of depressed parents are typically exposed to parental sadness and dysphoria, helplessness and hopelessness, and irritability and confusion. Although the exact effects of each of these patterns of behavior on children are not known, a common thread likely to be present during depressive episodes involves parental emotional and physical unavailability (Cummings & Cicchetti, 1990). Thus, there are compelling reasons to expect that being reared by a depressed caregiver is a risk factor for the development of insecure attachments in offspring.

A number of studies have examined the quality of attachment relationships in the offspring of parents with a mood disorder (see, for example, DeMulder & Radke-Yarrow, 1991; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985; Teti, Gelfand, Messinger, & Isabella, 1995). Associations between maternal depression and increased attachment insecurity, as well as between more severe and chronic depression and disorganized attachment, have been demonstrated. For example, Campbell, Cohn, Meyers, Ross, and Flanagan (1993) found that insecure attachments in infants were more frequent among those having mothers whose postpartum depression exceeded the first 6 months of the babies' lives. Murray (1992) similarly reported that insecure attachments were more prevalent among toddlers of postnatally depressed mothers than among toddlers of non-depressed mothers. Interestingly, however, unlike Campbell *et al.* (1993), Murray found no relation between the duration and severity of depression, and attachment insecurity. In an investigation of low-income urban mothers, a subset of whom were depressed, Lyons-Ruth, Connell, Grunebaum, and Botein (1990) found a higher proportion of insecure disorganized attachments among infants of depressed, untreated mothers than among infants whose mothers received treatment or infants with non-depressed mothers. More recently, Teti *et al.*

(1995) found that attachment insecurity was significantly associated with maternal depression among infants and preschoolers. Moreover, these investigators reported that children without unitary, coherent attachment strategies tended to have mothers who were more chronically impaired as compared with children with more coherent and organized attachment strategies (Teti *et al.*, 1995).

It is important to note, however, that not all children of depressed parents develop insecure attachments. For example, DeMulder and Radke-Yarrow (1991) reported that the rate of insecure attachment in children of mothers with unipolar depression did not differ from that evident in children of well mothers. Similarly, in a report by Frankel, Maslin-Cole, and Harmon (1991), 3-year-old preschoolers with depressed mothers were not found to differ from those with well mothers with respect to attachment security. Again, however, higher rates of insecurity were found in children whose mothers suffered from more chronic and severe illness.

Thus, some, but not all, studies have found that the severity and chronicity of maternal depression are related to child outcome. Findings highlighting these dimensions of maternal illness hearken back to Bowlby's emphasis on the adverse effects of sustained parental psychological unavailability. In cases of less severe depression, extended periods of negative parenting are less likely to have occurred. Consequently, issues related to how samples are recruited (e.g. community versus treatment samples, chronic versus postpartum-only depression, and middle-income versus more impoverished multiproblem families) also must be considered when examining the varied effects of maternal depression on child outcome.

Diversity in outcome among children with depressed caregivers underscores the reality that factors other than parental depression may eventuate in secure versus insecure attachment. The variability that has been observed in the interactions between depressed mothers and their infants (see, for example, Cicchetti & Toth, 1995; Cohn, Matias, Tronick, Connell, & Lyons-Ruth, 1986; Field, Healy, Goldstein, & Guthertz, 1990) also may account for some of the differences in the security of attachment found across investigations. Research has increasingly demonstrated that it is the nature of caregiving provided, not depression per se, that exerts an influence on the quality of attachment between children and their caregivers (Hammen, 1992). Such findings possess implications for the importance of the quality of parenting provided, even in the presence of a parental mood disorder. Moreover, the role that intervention may play in promoting positive caregiving in depressed parents highlights the potential plasticity of attachment organization in the early years of life. Additionally, the fact that family difficulties and child behavior problems have been found to continue, even after maternal depression has abated (Downey & Coyne, 1990; Lee & Gotlib, 1991), emphasizes the importance of providing intervention to avert long-term adjustment difficulties in children with depressed caregivers.

The adverse effects of more prolonged parental depression on the parent's offspring indicate the need to examine attachment in offspring of depressed parents over time. Egeland and Sroufe (1981) reported instability in attachment security in low-income non-abused infants with psychologically unavailable mothers, many of whom were described as depressed. In Egeland and Sroufe's sample, the rate of secure attachment decreased from 57% at 12 months to 0% at 18 months (Egeland & Sroufe, 1981). Similarly, in an investigation of a small sample of 12-month-old infants with affectively ill parents ($n = 7$, 1 with bipolar disorder, 6 with unipolar depression), similar increases in attachment insecurity were found between 12 and 18 months of age in toddlers with ill versus healthy parents (Gaensbauer, Harmon, Cytryn, & McKnew, 1984). Toddlers of well caregivers did not evidence this decrement in security of attachment. The decline in attachment security from 12 to 18 months in the toddlers in these investigations suggests that, over time, parental depression and its accompanying psychological unavailability may thwart a competent developmental course in these children. Therefore, when providing preventive interventions for offspring of depressed parents, intervenors should not be lulled into assuming that a secure relationship will remain secure; rather, interventions also should strive to sustain attachment security over time. However, the implications of these studies are limited by the small sample size, by the non-clinical and/or varied diagnoses of affective disorder in the caregivers, and by the multi-problem status of parents included in the larger of the two investigations (i.e., Egeland & Sroufe, 1981). Issues such as these make it difficult to ascertain confidently that it is parental depression rather than other risk factors that may be contributing to the decline in attachment security over time. Therefore, further longitudinal investigations of attachment security in children with depressed mothers are needed.

Maternal depression, with its increased risk for attachment insecurity, also possesses implications for future child development. Insecure attachments in offspring with mood-disordered parents have been related to behavior problems in later childhood (Easterbrooks, Davidson, & Chazan, 1993; Lyons-Ruth, 1992), as well as to interpersonal difficulties as children strive to negotiate relationships with peers (Radke-Yarrow, McCann, DeMulder, Belmont, Martinez, & Richardson, 1995; Rubin, Booth, Zahn-Waxler, Cummings, & Wilkinson, 1991; Zahn-Waxler, Denham, Cummings, & Iannotti, 1992). Children with depressed mothers have been found to evidence an array of problems, including emotional dysregulation, insecure attachments, aggression, non-compliance, attention deficits, low self-esteem, negative peer relations, and depressed mood (cf. Cicchetti & Toth, 1995, 1998; Downey & Coyne, 1990; Gelfand & Teti, 1990). Notably, studies also have coalesced to reveal higher rates of psychiatric and psychological problems in the offspring of affectively ill parents (Beardslee, Bemporad, Keller, & Klerman, 1983; Radke-Yarrow, Nottelmann, Martinez, Fox, & Belmont, 1992; Weissman *et al.*, 1987; Weissman *et al.*, 1997).

INSECURE ATTACHMENT AND PREVENTIVE INTERVENTION

The increased risk of attachment insecurity with which offspring of depressed caregivers are faced, the possibility that even infants with secure attachments will develop insecure attachments over time, the relations between attachment insecurity and future maladaptation and psychopathology in offspring, and the continuance of child maladaptation even after parental depression has remitted, all cohere to underscore the criticality of stemming these potentially negative developmental trajectories. Therefore, the development and evaluation of preventive interventions for young offspring of depressed parents, especially those targeted at fostering secure attachment relationships, emerge as an important avenue to pursue.

Prior to the current investigation, few attachment-theory based interventions directed specifically toward the prevention of attachment insecurity and future maladaptation in offspring of depressed mothers have been implemented and evaluated. However, a number of interventions aimed at preventing or correcting insecure attachments have been provided, often with multi-problem, high-risk parents as the recipients, many of whom were also experiencing depression (Erickson, Korfmacher, & Egeland, 1992; Lieberman, Weston, & Pawl, 1991; Lyons-Ruth *et al.*, 1990). The results of these interventions have been equivocal, possibly due to the multi-faceted nature of the interventions being administered and the extreme needs of the populations being served. In efforts to cull out information on the general effectiveness of such interventions, van IJzendoorn, Juffer, and Duyvesteyn (1995) conducted a meta-analysis of 12 studies that provided interventions designed to enhance parental sensitivity and/or children's attachment security. van IJzendoorn and his colleagues concluded that interventions were more successful at promoting maternal sensitivity than increasing children's attachment security. Additionally, intensive, representationally based interventions appeared to be less effective than short-term, behaviorally focused interventions. However, caution must be exercised in extrapolating from the findings of this meta-analysis due to the diversity in target populations being served, with recipients of intervention ranging from generally well-functioning mothers (e.g. van den Boom, 1994) to those struggling with extreme personal and contextual liabilities (e.g. Erickson *et al.*, 1992).

Although not included in the van IJzendoorn *et al.* (1995) meta-analysis, two additional interventions are relevant to our discussion of the efficacy of interventions in promoting attachment security. First, a home-based intervention designed to improve maternal self-efficacy and parenting was provided to depressed mothers during their infants' first year of life. This intervention involved 29 visits provided by public health nurses. However, the intervention was not found to be effective in improving attachment security, fostering maternal behavioral competence, or decreasing maternal stress (Gelfand, Teti, Seiner, & Jameson, 1996). More recently Cooper and

Murray (1997) reported on the evaluation of an intervention designed for mothers with postpartum depression. In this investigation, mothers were assigned randomly to one of four conditions, including routine primary care, non-directive counselling, cognitive-behavioral therapy, and attachment-theory guided dynamic psychotherapy. With the exception of the primary care condition, all treatment groups evidenced substantial improvement in mood as a result of intervention. However, although mothers in all intervention conditions reported fewer relationship difficulties with their child post-intervention, attachment security did not improve in any of the groups, nor were changes noted in the quality of face-to-face engagement between mothers and their toddlers. Cooper and Murray speculate that the failure of the intervention to impact on mother–child interaction may be a function of the fact that pre-treatment disturbances were not very severe in this community sample of women and that, therefore, there was little opportunity to detect change. Finally, the short-term nature of the intervention (eight weeks) also may have mitigated against instituting changes in the relationship; however, this interpretation is not consistent with meta-analytic findings of van IJzendoorn *et al.* (1995), where short-term interventions have been found to be more effective than more intensive modalities. In summary, although it is generally accepted that maternal depression can increase the risk that offspring will develop insecure attachments and subsequent behavioral maladaptation and psychopathology, it remains less clear what types of interventions may prove to be effective for preventing the emergence of difficulties in children with affectively ill mothers.

In conceptualizing what type of intervention would potentially be effective, etiological factors that may have contributed to maternal depression also must be considered. Specifically, many depressed women have themselves experienced histories involving loss and negative caregiving (Bemporad & Romano, 1992; Bifulco, Brown, & Harris, 1987; Brown, Harris, & Bifulco, 1986). Thus, it is possible that mothers' insecure representations of their own attachment figures not only influence affective and cognitive features of mothers' depression, but also may contribute to distortions in their perceptions of their child and their ability to form a secure attachment relationship with that child. To avoid this potentially detrimental process of early maternal experiences of caregiving contributing to disturbances in the current mother–child relationship, an intervention that addresses maternal history and how maternal attachment organization influences current mother–child attachment is indicated.

In the current investigation, the efficacy of an attachment-theory informed intervention (i.e., toddler–parent psychotherapy (TPP); see Lieberman, 1992) for toddlers with depressed mothers was evaluated. Drawing from the work of Fraiberg and Lieberman (see, for example, Fraiberg, Adelson, & Shapiro, 1975; Lieberman, 1991, 1992; Lieberman & Pawl, 1988, 1993), toddlers and their mothers were seen in joint therapy sessions, beginning when the toddlers were on average 20 months of age and continuing until they reached

the age of 3. The current investigation focused on assessing the efficacy of this preventive intervention for fostering attachment security in toddler offspring of depressed mothers.

A community sample of mothers who met diagnostic criteria for clinical depression during their offspring's first 18 months of life was recruited to participate in the current investigation. A community sample as opposed to a treatment sample was chosen because of our interest in prevention. Therefore, rather than focusing only on the most severely ill mothers, we felt that mothers who varied on issues such as the chronicity and severity of their illness would increase the potential generalizability of the intervention if it was found to be effective. Additionally, we targeted our intervention for women of middle socioeconomic status or higher, all of whom had at least a high school education. This recruitment strategy was utilized to enable us to evaluate the effectiveness of a preventive intervention specifically addressing the effects of maternal depression, without the additional confounding effects associated with multiple risk factors likely to be present in low-income samples (Downey & Coyne, 1990). If effective, the next step would be to provide and test the therapeutic strategy herein utilized with more multiproblem populations.

We based our decision to recruit depressed mothers when their offspring were approximately 20 months of age on research as well as clinical considerations. Because several studies have found shifts from secure to insecure attachment between 12 and 18 months of age in offspring of depressed mothers, it appears that the toddler period confronts the mother–child dyad with challenges that are not met effectively. The chronicity of maternal depression may impede the toddler from being able to rely on the mother as a 'secure base'. During toddlerhood, depressed mothers may become especially overwhelmed by the demands associated with parenting an active, inquisitive and increasingly independent child, who strives for initial individuation from the mother (Cicchetti & Aber, 1986). As these strivings for autonomy reach ascendance, a depressed mother may feel rejected by her child's increased interest in aspects of the world not related to the dyadic relationship. This tendency might be especially likely to occur in women who themselves had histories of rejection and who therefore are sensitized to perceiving rejection even in generally benign circumstances. In order to prevent the coalescence of insecure attachment and to help mothers accurately interpret the changes associated with toddlerhood, we felt that the provision of a preventive intervention during this developmental period was especially important.

Although, to date, investigations of attachment security in offspring of depressed mothers have predominantly relied on the Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978), the Attachment Q-Set (AQS; Waters & Deane, 1985) also has been shown to be useful in assessing attachment. Consistent with the aims of the Strange Situation, the AQS focuses on children's secure base behaviors. During the AQS assessment, raters are asked to characterize the degree to which descriptors are like the child's current

behavior. The AQS can be completed by mothers or by home visitors (Teti & McGourty, 1996).

A number of studies have examined the validity of the AQS as a measure of attachment security when completed by trained raters (Jacobson & Frye, 1991; Teti, Nakagawa, Das, & Wirth, 1991; Waters, 1978). Teti and McGourty (1996) have found that agreement between Q-sets of mothers and observers is high when observers have a sufficient sample of child behavior and when mothers are carefully trained on AQS procedures. Maternal Q-sets also have been shown to relate to Strange Situation classifications (Vaughn & Waters, 1990), as well as in theoretically expected ways to maternal working models and child security (Das Eiden, Teti, & Corns, 1995). Thus, the AQS has demonstrated validity as a method for assessing attachment, even when completed by mothers.

Based on prior research, the following hypotheses were generated.

1 At baseline, prior to the initiation of the preventive intervention, offspring of depressed mothers were expected to exhibit higher rates of attachment insecurity than non-depressed controls (NC). No differences at baseline were anticipated in attachment security between toddlers and their depressed mothers randomly assigned to the Depressed Intervention (DI) group versus the Depressed Control (DC) group.
2 At the conclusion of the intervention (36 months), participants in the DI group were expected to evidence a greater percentage of secure attachments than those in the DC group. Moreover, those in the DI group were expected to evidence rates of security equivalent to the non-depressed control group (NC).
3 Stability and change in attachment security also were predicted. Specifically, greater stability of attachment security/insecurity was predicted in the absence of intervention in the DC and NC groups. In contrast, due to the intervention's goal of fostering security, instability in the DI group was expected, with children changing from insecure to secure attachments. Secure children in the DI group at baseline also were expected to remain secure.
4 Although no hypotheses were made, we also were interested in examining the ongoing effects of chronicity of maternal depression on attachment security.

METHOD

Participants

Participants in this investigation were recruited for a longitudinal study designed to evaluate the efficacy of a preventive intervention for toddlers of depressed mothers and to examine the effects of maternal depression on child

development. The present sample included 108 mothers and their toddlers (54 boys and 54 girls) who at baseline assessments averaged 20.40 months of age ($SD = 2.38$). Off the 108 toddlers, 63 had mothers with a history of major depression that minimally had involved a major depressive episode occurring at some time since the toddler had been born. Prior to their child's birth 77.8% of the mothers had had a major depressive episode. Only 12.6% of mothers were depressed in the postpartum period exclusively and these mothers were equally distributed in the DI and DC groups. The remaining 45 children had mothers with no history of major psychiatric disorder. Maternal age ranged from 22 to 41 years ($M = 31.70$, $SD = 4.36$).

Participant recruitment In order to minimize co-occurring risk factors that may accompany parental depression (Downey & Coyne, 1990), families of non-low socioeconomic status were recruited. Specifically, parents were required to have at least a high school education, and families could not be reliant on public assistance. A community sample of mothers with a history of depressive disorder was recruited through referrals from mental health professionals and through notices placed in newspapers and community publications, in medical offices and on community bulletin boards. In addition to having a child approximately 20 months of age, diagnostic inclusion criteria for mothers in the depressed groups required mothers to meet DSM-III-R criteria for major depression occurring at some period since the birth of their toddlers. The depressed mothers also had to be willing to accept random assignment to either the intervention or the non-intervention group following completion of baseline assessments. Of the mothers who were recruited for major depression, 72 were screened from participation because of not meeting diagnostic inclusion criteria; 131 mothers met diagnostic criteria and were accepted for random assignment to the Depressed Intervention (DI) and Depressed Control (DC) groups.

For the Non-depressed Control (NC) group of mothers, participants were recruited directly by contacting families living in the vicinity of the families of depressed mothers. Names of potential families with a toddler of the targeted age were obtained from birth records. In addition to reducing risk factors such as poverty, low education and single parent status, as required for families with depressed mothers, NC mothers were screened for the presence of current or past major psychiatric disorder using the DIS-III-R (see Measures section), and only mothers who did not have a current or past history of major psychiatric disorder were retained. Thus, in this investigation, NC participants can be best described as a 'super control' group, unlike normative samples that have not been screened for past or current psychopathology and that likely contain some mothers with disorders, given the base rates for psychopathology in the general population. After 21 potential participants had been screened out due to present or past psychopathology, 70 mothers were retained in the Non-depressed Control (NC) group. Four of these NC mothers discontinued participation before post-intervention follow-up assessments.

Participant retention Through a randomized blocks procedure based on demographic characteristics of the depressed mothers, initially 67 mothers were randomly assigned to the DI group and 64 mothers were randomly assigned to the DC group. (See Table 1.) A number of families in the DI group ($n = 8$) and the DC group ($n = 8$) discontinued participation in the study or moved from the area prior to the post-intervention assessments at age 3. Further, among the families randomly assigned to the DI group, 5 declined to participate in the intervention, and 5 terminated the intervention prematurely. Additionally, 3 cases were eliminated from the sample for attending fewer than 22 sessions, a number that is significantly less than the remainder of the participants and that is too small to be viewed as having completed the intervention effectively (i.e., the 3 cases did not receive an adequate dose of the intervention). Potential differences among these five groups of depressed mothers (DI; DC; DI dropped; DC dropped; and a combined group of refused intervention, dropped intervention early, or too few sessions) were evaluated using analyses of variance. In terms of demographic characteristics, no significant group differences were found for toddler age, maternal age, maternal education, or paternal education. Chi-square analyses revealed no significant demographic differences for child gender, maternal race, or family socioeconomic status level. The groups of mothers also were equivalent in terms of their baseline Beck Depression Inventory (BDI) scores. Additionally, potential differences in contextual features related to maternal depression (Cicchetti, Rogosch, & Toth, 1998; Downey & Coyne, 1990) were examined. No significant group differences were found in terms of perceived stress, parenting hassles, dimensions of social support, marital adjustment, or features of the relational family environment (i.e., cohesion, expressiveness, or conflict). Thus, participant attrition did not appear to alter the comparability of the depressed groups that were retained through follow-up assessments. (See Measures section for a summary of instruments assessing these contextual features.)

Of the 168 families who completed baseline and post-intervention follow-up assessments (DI: $n = 46$, DC: $n = 56$, NC: $n = 66$), 60 mothers did not complete the AQS at both the baseline and follow-up periods, and these mothers were distributed across the three groups. (See Table 1.) Two-way ANOVAs with group (DI, DC, NC) and AQS completion (no versus yes) as independent variables were conducted on baseline measures in order to evaluate comparability for the participants who had complete data.

We were interested in whether there were differences between those mothers who did and did not complete both Attachment Q-sets and whether there were two-way interaction effects, indicating differences across the groups in terms of those who completed or did not complete the AQS at both time periods. No AQS completion main effect or interaction effects were found for maternal baseline depressive symptoms (BDI), marital adjustment, social support indices, or family cohesiveness. Similarly, no main effect or interaction effect was found for maternal age, maternal education level, paternal education level, or family socioeconomic status level. Main effects were

Table 1 Participant retention

Group	*Baseline recruited sample*	*Depressed intervention who refused intervention/ discontinued*	*Cases dropping out of study before follow-up*	*Age 36 months post-intervention follow-up*	*Completed pre & post AQS*
Depressed Intervention	67	–13	–8	46	27
Depressed Control	64		–8	56	36
Non-depressed Control	70		–4	66	45
	201	(–13)	(–20)	168	108

found for perceived stress and for daily parenting hassles, such that mothers who did not complete the AQS at both time periods reported higher stress in these areas than mothers who did complete the AQS two times. Thus, despite incomplete data from 60 mothers, the participants who did and did not complete AQS at both time periods appeared highly comparable, although mothers who did not complete both AQS administrations reported higher general and parenting stress. (See Measures section for a description of instruments used to assess these contextual features.)

The current report is based on the remaining 108 participants who completed both the baseline and follow-up post-intervention research assessments: DI: $n = 27$; DC: $n = 36$; and NC: $n = 45$. The participants in the DI, DC and NC groups were comparable on a range of basic demographic characteristics. Mothers were predominantly Caucasian (95.4%), and minority representation did not differ across groups. Maternal education also was comparable across groups. Overall, 52.8% of the mothers were college graduates or had received advanced degrees. Family socioeconomic status based on Hollingshead's (1975) four-factor index, incorporating both mothers' and fathers' education and occupational levels, also was consistent across groups. The ranking of 74% was in the two highest socioeconomic status levels (IV and V). The age of the toddlers was equivalent across groups, as was maternal age ($M = 31.70$, $SD = 4.36$). Although the majority of mothers in all groups were married, the rate of marital instability, not surprisingly, was higher in the two depressed groups ($X^2(2) = 9.11$, $p = .01$). The percentage of mothers in the DI and DC groups, respectively, who were married was 85.2% and 80.6%, contrasting with 100% in the NC group. As expected, in addition to the diagnostic differences between the DI and DC versus NC groups, the current level of depressive symptoms as measured by the Beck Depression Inventory (BDI) was higher in the DI ($M = 14.22$, $SD = 9.64$) and DC ($M =$

17.42, SD = 8.47) than in the NC group (M = 2.40, SD = 2.39) ($F(2,105)$ = 51.21, $p < .0001$).

Consistent with our prior work (Cicchetti *et al.*, 1998), we also examined the comparability of the DI and DC groups in contrast with the NC group on contextual features associated with maternal mood disorder. In all cases, the DI and DC groups did not differ from each other, and both groups were significantly different from the NC group as revealed in ANOVAs with follow-up post-hoc Tukey tests. In all cases, the depressed groups were found to exhibit more contextual difficulty. The DI and DC groups relative to the NC group were found to have higher perceived stress, more parenting hassles, lower social support, greater marital distress, and less adaptive family relational features (less cohesion, less expressiveness, more conflict). (See Measures section for a description of instruments used to assess these contextual features.)

Procedures

At baseline, families participating in the investigation took part in a series of home- and laboratory-based assessment sessions. During an initial home-based session, mothers were administered the DIS-III-R, and completed the BDI and a demographics interview. Families meeting research criteria as described above were retained in the sample. In a subsequent research session conducted in the home, mothers completed additional research measures described below, and they were given detailed instructions and training on how to complete the AQS. They were asked to observe their child for two weeks before completing the AQS. Upon completion of the baseline research sessions, families with depressed mothers were randomly assigned to the DI and DC groups.

Post-intervention assessments occurred subsequent to the child turning age 3 when the DI group completed the course of intervention. Mothers again completed the DIS-III-R, a demographics interview, the BDI and the AQS.

Preventive intervention

In view of the potential challenges to the development of children with depressed caregivers, the provision and evaluation of preventive interventions for this population are extremely important. Although it is not uncommon for depressed women to receive therapeutic interventions for their depression that involve pharmacological treatments and/or individual therapy, it is not likely that such interventions will address the woman as a mother and the relationship that is forming between mother and child. Unfortunately, disregard for this evolving relationship may result in the emergence of an insecure attachment relationship and associated developmental difficulties for the child. This, in turn, may serve to perpetuate maternal depression as the caregiver may be confronted with current and future

child behavior problems and the associated guilt resulting from the fear that her depression has interfered with effective parenting.

An intervention approach that emanates from the rapidly growing field of infant mental health (Stern, 1995; Zeanah, 1993) was developed with the goal of improving the early mother–child relationship in women who had experienced a major unipolar depressive disorder at some time subsequent to the birth of their child. This intervention, referred to as toddler–parent psychotherapy (TPP), has its origins in the work of Selma Fraiberg, who described the pernicious influences that an unresolved parental past can exert on the evolving parent–child relationship (Fraiberg, Adelson, & Shapiro, 1975). Building upon this model, Lieberman and her colleagues applied this model of intervention to a sample of immigrant Latino mothers and their infants (Lieberman, Weston, & Pawl, 1991). In the work described in the current paper, the theoretical underpinnings and techniques embodied by toddler–parent psychotherapy (Lieberman, 1992) were applied to the provision of a preventive intervention for depressed mothers and their toddlers. The length of the intervention period averaged 59.03 weeks (SD = 10.44), and ranged from 42.88 to 78.93 weeks. The mean number of intervention sessions conducted was 45.63 (SD = 11.40; range = 31–68).

In TPP, mothers and their toddlers are seen in joint therapy sessions. It is through the observation of the toddler–mother dyad that therapeutic insights into the influence of maternal representation on parenting can be gained. In the language of attachment theory, TPP is designed to provide the mother with a corrective emotional experience in the context of the relationship with the therapist. Through empathy, respect, concern, accommodation and positive regard, an environment is provided for the mother and toddler in which new experiences of self in relation to others and to the toddler can be internalized. Thus, if the mother has a generalized negative representational model of self and relationships, then a therapeutic goal is to help the mother to utilize more specific representations with regard to various relationship partners. Evolving positive representations of the therapist can be utilized to contrast with maternal representations of self in relation to parents. As the mother is able to reconstruct representations of self in relation to others through the therapeutic relationship, she also is able to reconstruct representations of herself in relation to her child.

Within the therapeutic sessions, the therapist strives to alter the relationship between mother and toddler. Toward this end, therapists must attend to both the interactional and the representational level as they are manifested during the therapy sessions. Not only are maternal representations that have evolved from the mother's relationship history viewed as affecting the character of the interactions between her and the child, but interactions and toddler behaviors also evoke maternal representations that influence the mother's reactions to the toddler and her experience of self. As such, seemingly ordinary behaviors between mother and toddler during therapy ses-

sions are regarded as behavioral manifestations of representational themes. It is through the use of observation and empathic comments that the therapist works toward assisting the mother in recognizing how her representations are enacted during her interactions with her infant, thereby allowing for the clarification of distorted perceptions and alterations of how she experiences and perceives her toddler and herself. The therapist also attends to the nature of the interactions that occur between the mother and the toddler, the mother and the therapist, and the therapist and the toddler. Interactions in one relationship pair tend to elicit parallel interactions in other relationship pairs. Thus, the attention to parallel process in interactions across relationships and the influence of representations on these interactions provide templates for modifying maternal representations as they are enacted behaviorally in the mother–child relationship. It is important to underscore that in TPP therapists do not model appropriate mother–child interactions or seek to modify parenting behavior or verbalizations through didactic instruction. Rather, therapists strive to respond to maternal statements and interactional patterns, linking current maternal conceptualizations of relationships to mothers' childhood caregiving experiences.

To summarize, TPP seeks to highlight, clarify and restructure the dynamic balance between representational and interactional contributions to the quality of the relationship between mother and child. Moreover, it is expected that the modified maternal representations that develop with regard to mother and child also will affect interactions that the mother has with other relationship figures. In TPP, therapeutic change is seen as resulting from increasing maternal understanding regarding the effects of prior relationships on current feelings and interactions. By expanding positive representations of the self, and of the self in relation to others, it is expected that maternal sensitivity, responsivity and attunement to the child will improve, and maternal satisfaction with other relationships also will increase.

In the current intervention, fidelity of TPP was monitored through weekly individual supervision, weekly group presentations and discussions of videotaped cases, and monthly monitoring of videotaped sessions for each case by one of the authors (DC), who was not providing supervision for the intervention therapists and therefore was able objectively to assess adherence to the parameters of the intervention. A checklist was utilized to assess adherence to the parameters of the intervention and if any concerns emerged they were brought to the immediate attention of the therapist's supervisor.

Measures

The Diagnostic Interview Schedule, 3rd ed., revised (DIS-III-R; Robins *et al.*, 1985) The Diagnostic Interview Schedule, a structured psychiatric interview schedule, has undergone extensive development and reliability and validity studies for use in psychiatric epidemiological field studies (Robins &

Regier, 1991). The DIS-III-R version of the DIS, corresponding to the diagnostic criteria specified in the third edition, revised, of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III-R; American Psychiatric Association, 1987) was used in this investigation. The interview consists of approximately 260 items designed to be administered in a standard interview sequence. Because of its highly structured format, the DIS may be administered by interviewers who do not possess a high level of clinical training. Questions are answered on a yes or no basis, and the need for sensitive clinical judgments in asking questions and recording responses not endorsed in a given section eliminates the need for further probes with the examinee. The DIS assesses the presence of adult psychiatric disorders, allowing for assignment of 49 DSM-III-R Axis I diagnoses.

The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) The BDI is an extensively used, 21-item, self-report measure that assesses current affective, cognitive, motivational and physiological symptoms of depression. Each item includes four self-evaluative statements that are scored from 0 to 3, with 3 indicating the most intense symptom. The BDI has been found to correlate with psychiatric rating of depression in both psychiatric and student samples (Beck, Steer, & Garbin, 1988; Bumberry, Oliver, & McClure, 1978). Test-retest stabilities of the BDI have been reported to range from .48 to .86 among psychiatric patients and from .60 to .83 among non-psychiatric subjects (Beck *et al.*, 1988). Cut-off scores have been established, with 0–9 reflecting no or minimal depression, 10–18 reflecting mild to moderate depression, 19–29 reflecting moderate to severe depression, and 30–63 reflecting severe depression (Beck *et al.*, 1988).

The Attachment Q-set (AQS; Waters, 1995) Version 3 of the AQS consists of 90 individual statements that are descriptive of the behavior of infants and young children observed during periods of interaction with their caregivers. The AQS was designed for children aged 12 to 36 months (Waters & Deane, 1985). Items were selected to provide a comprehensive portrayal of the secure-base behavior of the child with respect to the caregiver. The AQS has been used to assess child attachment behaviors both by trained observers and by parents (Teti & McGourty, 1996; Waters, 1995; Waters, Vaughn, Posada, & Kondo-Ikemura, 1995). It is completed by assigning items to categories using a fixed distribution. In the current investigation, mothers were instructed to sort the items into nine categories with respect to their salience for the target child. Mothers were instructed individually on the use of the AQS and directed to observe their child for a period of two weeks prior to completing the sort. Items more characteristic of the child are given high placements (i.e., categories 7–9), whereas items less characteristic of the child are assigned to low placements (i.e., categories 1–3). Items that are neither characteristic nor uncharacteristic and/or items that the caregiver did not observe are placed in the center of the item distribution (i.e., categories 4–6).

In this study, the criterion sort method of scoring was utilized. This technique allows Q-set descriptions of the child to be compared with the criterion sort established by expert raters with an individual child's score that reflects the degree of congruence between the individual and the criterion sorts. The criterion sorts used in this study were for attachment security and dependency (Waters, 1995).

Examples of items with high values on the security criterion include: 'Child clearly shows a pattern of using the mother as a base from which to explore' and 'If held in the mother's arms, child stops crying and quickly recovers from being upset'. Items with low values on the security criterion include: 'When something upsets the child, he stays where he is and cries' and 'Child easily becomes angry at mother'. In contrast, items with high values on the dependency criterion include: 'Child wants to be center of mother's attention; If mother is busy or talking to someone, he interrupts' and 'Child is demanding and impatient with mother, fusses and persists unless she does what he wants right away'. Low items on the dependency scale include: 'Child rarely asks for help' and 'Child is independent with mother, prefers to play on own; leaves mother easily when he wants to play'.

The AQS has been shown to relate to attachment classifications derived from the Strange Situation (Vaughn & Waters, 1990), as well as to parenting quality (Teti *et al.*, 1991). Construct validity of the AQS also has been demonstrated (Aber & Baker, 1990; Howes & Hamilton, 1992; Vaughn & Waters, 1990).

The Attachment Q-Scales (Howes & Ritchie, in press) The Attachment Q-scales developed by Howes and Ritchie (in press) also were used in this study to validate the interpretation of the attachment cluster groupings that were derived from the attachment Q-set criterion sorts for attachment security and dependency. These scales, based on content-relevant items, include three subscales related to secure attachment: *Secure Base* (sample item 21: 'Child keeps track of mother's location when he plays around the house. Calls to her now and then; notices her go from room to room. Notices if she changes activities'); *Seeks Comfort* (sample item 44: 'Child asks for mother and enjoys having her hold, hug, and cuddle him'); and *Harmony* (sample item 1: 'Child readily shares with mother or lets her hold things if she asks to'). In contrast, two subscales are related to insecure attachment: *Avoid* (sample item 88: 'When something upsets the child, he sits where he is and cries'); and *Resist* (sample item 38: 'Child is demanding and impatient with mother. Fusses and persists unless she does what he wants right away'). Howes and Ritchie (in press) report Cronbach alphas for these scales ranging from .72 to .96. These subscales were used to classify children into different attachment security groupings, and Howes and Ritchie (in press) have related these groupings to behavior problems, peer relations and quality of relationships with teachers.

Contextual measures Although not central to the examination of group differences in attachment security, the following measures assessed contextual features expected to be compromised in the families of mothers with depressive disorders (see Cicchetti *et al.*, 1998, for a more complete description of these measures). These instruments included:

1 *The Perceived Stress Scale* (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS is a 14-item, self-report measure of perceived stress.
2 *The Daily Hassles Scale of Parenting Events* (Crnic & Greenberg, 1985). This scale consists of 20 items that describe routine daily problems occurring in family life.
3 *The Interpersonal Support Evaluation List* (ISEL; Cohen & Hoberman, 1983). The ISEL assesses perceived supports available to mothers. Four perceived aspects of social support are assessed, including: tangible aid; belonging; self-esteem; and appraisal.
4 *The Dyadic Adjustment Scale* (DAS; Spanier, 1989). The DAS assesses the quality of the marital relationship and yields the following subscales: Dyadic Consensus; Dyadic Cohesion; Dyadic Satisfaction; and Affectional Expression.
5 *The Family Environment Scale* (FES; Moos, 1974). The FES measures the social and environmental characteristics of the family. Three subscales assessing the relational aspects of family life were administered: Cohesion; Conflict; and Expressiveness.

RESULTS

Delineation of patterns of attachment security

In keeping with our prior work (Cicchetti *et al.*, 1998), we utilized the AQS completed by mothers at baseline and at the post-intervention period at age 36 months to categorize children into different attachment groups. Data were available from 108 mothers at both baseline and follow-up. We compared scores on the attachment security and dependency criteria for mothers who completed the AQS at both time periods versus mothers who did not complete the measure either at baseline or at follow-up. No differences in attachment security or dependency were found at either baseline or follow-up between the reports from these groups of mothers, suggesting that mothers who had not completed Q-sets at both time points did not differ in their use of the AQS from those mothers included in this investigation.

In order to identify patterns of attachment behavior in the toddlers, rather than relying on a unidimensional approach, the AQS dimensions of attachment security and dependency were both utilized. Instead of looking at differences on a continuous dimension or utilizing an arbitrary cut-point on a single dimension to characterize secure/insecure attachments, a multi-dimensional

approach was employed. Cluster analyses at baseline and at follow-up were used to group together children with similar profiles on the traditional AQS dimensions of security and dependency. The attachment security and dependency criterion scores (Waters, 1995) were subjected to a K-means cluster analysis at both time periods. With the goal of potentially identifying children representing the four major attachment groups, A, B, C and D (Ainsworth *et al.*, 1978; Main & Solomon, 1990), we focused on the four-group cluster analysis solution. However, because the AQS does not contain items that are directly related to the atypical features (i.e., freezing, stilling, stereotypies) or the inconsistent behaviors evidenced by type D, the results did not suggest the identification of a D group. Rather, based on the configuration of attachment security and dependency scores, two secure groups and two insecure groups emerged at both time periods. The two secure groups at both time periods were equivalent in terms of their attachment security scores but differed in terms of their scores on dependency. These two secure groups may be thought of as analogous to the B^1/B^2 and the B^3/B^4 subgroups of secure children (cf. Sroufe & Waters, 1977). Because we were not interested in these within-group differences for secure children, at each time period, we combined the two groups into one secure group.

Table 2 depicts the mean scores on the attachment security and dependency criteria at baseline and at follow-up for the resulting attachment groups. As a consequence of the cluster analytic procedures, at baseline the groups were significantly different on attachment security ($F(2,105) = 96.39, p < .0001$) and on dependency ($F(2,105) = 25.35$, $p < .0001$). The configuration of group differences indicates that group 2 ($n = 77$, 71.3%) is consistent with a secure attachment pattern (B), group 1 ($n = 13$, 12.0%) resembles an anxious-avoidant pattern (A), and group 3 ($n = 18$, 16.7%) is similar to an anxious-resistant pattern (C). Specifically, post-hoc Tukey comparisons indicated that each of the three groups was significantly different on attachment security, with group 2 (Secure: B) having higher scores than group 3 (Anxious-Resistant: C), which had higher scores than group 1 (Anxious-Avoidant: A). For

Table 2 Security and dependency mean scores for attachment clusters at baseline and at follow-up

Group	*Baseline*		*Follow-up*	
	Security *M (SD)*	*Dependency* *M (SD)*	*Security* *M (SD)*	*Dependency* *M (SD)*
1 (A)	.04 (.12)	−.09 (.18)	.18 (.13)	−.13 (.09)
2 (B)	.51 (.11)	−.10 (.15)	.51 (.13)	−.06 (.16)
3 (C)	.33 (.14)	.18 (.14)	−.19 (.19)	.15 (.15)
	$F(2,105) = 96.39$	$F(2,105) = 25.35$	$F(2,105) = 125.55$	$F(2,105) = (9.19)$
	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0002$
	B > C > A	C > A, B	B > A > C	C > A, B

dependency, groups 1 (A) and 2 (B) were not significantly different, but both of these groups had lower scores than group 3 (C).

Similar group differences were found for the derived attachment groups at the post-intervention follow-up assessment. Again, the groups were significantly different on attachment security ($F(2,105) = 125.55$, $p < .0001$) and dependency ($F(2,105) = 9.19$, $p < .0002$). Group 2 (B) included 75 children (69.4%), group 1 (A) contained 27 (25.0%) and group 3 (C) contained 6 (5.6%). This distribution is comparable to the distribution of traditional attachment classifications (A, B, C) obtained with the Strange Situation in normative groups (Ainsworth *et al.*, 1978). Post-hoc Tukey tests indicated that group 2 (B) had higher attachment security scores than group 1 (A), which had higher attachment scores than group 3 (C). For dependency, group 3 (C) had higher scores than both groups 1 (A) and 2 (B), which did not differ from each other. These configurations again indicate that the pattern of group 2 is consistent with a secure attachment pattern, with group 1 consistent with an anxious-avoidant pattern and group 3 consistent with an anxious-resistant pattern.

The validity of these attachment group designations was further verified by utilizing the more differentiated Attachment Q-scales of Howes and Smith (1995). Table 3 lists the scores for the three attachment groups on the Attachment Q-scales at baseline and at follow-up. At baseline, significant group differences were found for each of the scales: Comfort ($F(2,105) = 10.72$, $p < .0001$); Harmony ($F(2,105) = 56.02$, $p < .0001$); Base (i.e., proximity-seeking) ($F(2,105) = 12.94$, $p < .0001$); Avoidance ($F(2,105) = 10.46$, $p < .0001$); and Resistance ($F(2,105) = 44.26$, $p < .0001$). Tukey post-hoc comparisons further revealed a pattern of group differences consistent with the group designations, and these differences are indicated in Table 3. The

Table 3 Attachment scale mean scores for attachment clusters at baseline and at follow-up

Attachment Q-scales	*Baseline F*	*p*	*A*	*B*	*C*	*Contrast*
Comfort	16.72	.0001	5.68	7.21	7.11	B, C > A
Harmony	56.02	.0000	4.87	6.83	5.95	B > C > A
Base	12.94	.0000	4.11	5.28	6.07	C > B > A
Avoidance	10.46	.0001	5.63	4.79	3.73	A > B > C
Resistance	44.26	.0000	4.73	2.95	4.17	A, C > B
	Follow-up					
Comfort	25.35	.0000	6.13	7.28	4.90	B > A > C
Harmony	66.51	.0000	5.06	6.57	3.41	B > A > C
Base	18.00	.0000	4.11	5.34	5.44	B, C > A
Avoidance	9.10	.0002	5.56	4.67	4.42	A > B, C
Resistance	63.77	.0000	4.49	3.12	6.40	C > A > B

anxious-avoidant group was significantly different from the secure group on each of the five Q-scales; each difference was in the expected direction. Moreover, the anxious-avoidant group also was distinct from the anxious-resistant group on four of the five scales, but these two groups were equivalent in terms of having higher Resistance scores than the secure group. The anxious-resistant group was significantly different from both of the other two groups in terms of having the lowest scores on the Avoidance scale and the highest scores on the Base scale (i.e., proximity-seeking), indicative of clingy behavior. Although comparable with the secure group on the Comfort scale, the anxious-resistant group evidenced lower scores on Harmony and higher scores on Resistance than the secure group. The secure group was marked by the highest scores for Harmony and the lowest scores for Resistance. Additionally, the secure group scored between the two insecure groups on the Base (proximity-seeking) and Avoidance scales, indicative of more balance between approach and exploration than the other two groups.

At the post-intervention period at 36 months of age, significant between-group differences on each of the Attachment Q-scales were again obtained: Comfort ($F(2,105) = 25.35, p < .0001$); Harmony ($F(2,105) = 66.51, p < .0001$); Base ($F(2,105) = 18.00, p < .0001$); Avoidance ($F(2,105) = 9.10, p < .0002$); and Resistance ($F(2,105) = 63.77, p < .0001$). Tukey post-hoc tests were again used to examine the attachment group differences. As shown in Table 3, the anxious-resistant group was distinct from the anxious-avoidant group on each of the five scales. The anxious-resistant group was comparable to the secure group on the Avoidance and Base scales, but evidenced lower scores on the Comfort and Harmony scales and higher scores on the Resistance scale. Again, the avoidant group was distinct from the secure group on each of the five scales. The secure group had higher scores on the Comfort and Harmony scales than the two insecure groups and the lowest scores on the Resistance scale. These results again support the differentiation of distinct secure and insecure patterns of attachment behavior.

Comparison of depression intervention groups at baseline

At baseline and at follow-up, because of the three-group design and the relatively low numbers of children classified in the anxious-avoidant and anxious-resistant groups, these groups were combined into an insecure group for subsequent analyses at each time period [baseline insecure $n = 31$ (28.7%); follow-up insecure $n = 33$ (30.6%)]. Table 4 indicates the number of children classified into the secure and insecure groups for the Depressed Intervention (DI), Depressed Control (DC) and Non-depressed Control (NC) groups. The distribution of secure and insecure classifications across the groups indicated a significant group difference ($X^2(2) = 9.43, p < .009$). Overall, at baseline 44.4% of toddlers in the DI group and 36.1% of toddlers in the DC group were classified as insecure, in contrast to 13.3% in the NC group. The percentage of insecure children in the two depression groups was not

Table 4 Secure versus insecure cluster membership of intervention groups at baseline and at follow-up

Group	*Baseline* *Depressed Intervention*	*Depressed Control*	*Non-depressed Control*
Insecure	12	13	6
	44.4%	36.1%	13.3%
Secure	15	23	39
	55.6%	63.9%	86.7%
			$\chi^2(2) = 9.43, p < .009$
	Follow-up		
Insecure	7	17	9
	25.9%	47.2%	20%
Secure	20	19	36
	74.1%	52.8%	80%
			$\chi^2(2) = 7.35, p < .025$

significantly different ($X^2(1) = .45$, ns). However, both the DI group ($X^2(1) = 8.71$, $p < .003$) and the DC group ($X^2(1) = 5.78$, $p < .016$) had higher numbers of toddlers classified as insecure than the NC group. Thus, these findings confirm a higher rate of insecure attachment in the depressed groups relative to the non-depressed group and establish that the two depressed groups were equivalent in terms of rate of insecure attachment at baseline.

Comparison of depression intervention groups at follow-up

At the end of the intervention when the children were 36 months of age, the groups were again compared in terms of the distribution of children classified as secure versus insecure. (See Table 4.) Again, differences between the groups were found ($X^2(2) = 7.35, p < .025$). The rate of insecurity in the DC group was 47.2%, compared with 25.9% in the DI group and 20.0% in the NC group. Thus, there appeared to be a shift toward a lower rate of insecurity in the DI group to a level comparable with the NC group. In contrast, the rate of insecurity in the DC group increased by 11.1%. The rate of insecurity between the DI group and the NC group, although significantly different at baseline, was no longer significant ($X^2(1) = .56$, ns) at follow-up. Thus, change had occurred in the DI group, attaining a rate of security/insecurity comparable with the NC group. In contrast, there continued to be a significant difference in the rate of insecurity between the DC and NC groups ($X^2(1) = 6.80, p < .009$). The DC group continued to exhibit a higher rate of insecurity (47.2%) compared with the NC group (20.0%). Although the two depression groups were not different at baseline in terms of the rate of insecurity, at post-intervention these groups evidenced a trend ($X^2(1) = 2.97$,

$p < .08$) toward higher insecurity in the DC group (47.2%) as compared with the DI group (25.9%). In terms of changing rates of insecurity from baseline to post-intervention follow-up, the DI group *decreased* by –18.5%, whereas the DC group *increased* by +11.1%. Thus, the DI group evidenced a 29.6% decrement in insecurity, relative to the DC group, as illustrated in Figure 1.

Within each of the three groups, the pattern of stability versus change in attachment classification for individual cases from baseline to post-intervention also was examined, as shown in Table 5. For the DC and the NC groups, evidence for stability in attachment classification was found. For the DC group, 69.2% of the children classified as insecure at baseline were classified as insecure at follow-up and 65.2% of those classified as secure at baseline were secure at follow-up. This stability was confirmed by a significant association between baseline and follow-up classification ($X^2(1) = 3.95$, $p < .046$). Stability in attachment classification from baseline to follow-up also was evident in the NC group ($X^2(1) = 3.89$, $p < .048$); 73.3% of the NC group was classified as secure at both time periods. In contrast, unlike the other two groups, stability in attachment classification from baseline to follow-up was not supported in the DI group ($X^2(1) = .62$, ns), indicating that a discontinuity in attachment security had occurred for some cases within this group. Positive effects of the intervention were evidenced by continued secure designations for 80.0% of the toddlers classified as secure at baseline. Of those

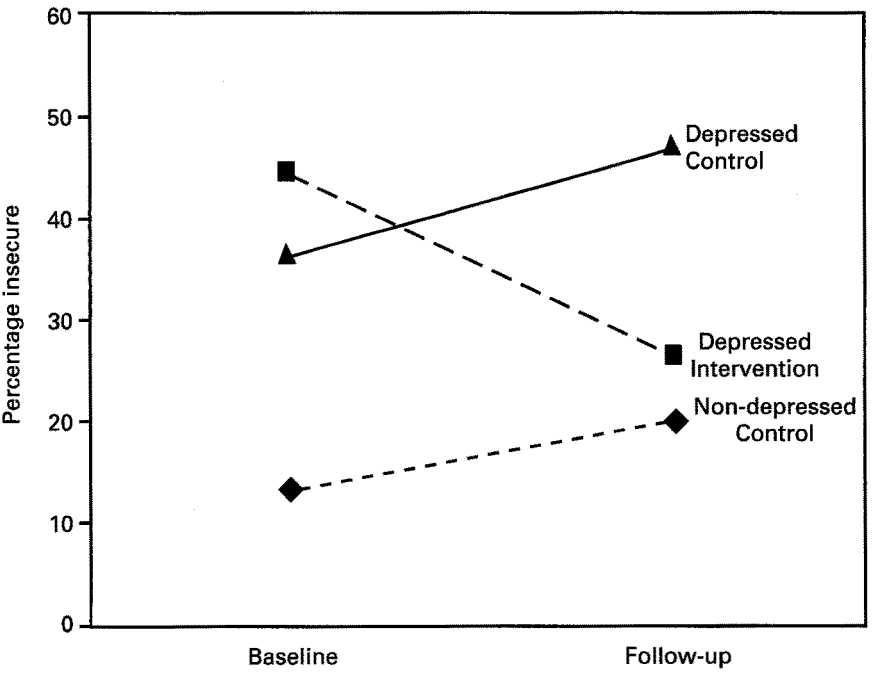

Figure 1 Percentage of cases with insecure cluster membership by intervention groups at baseline and at follow-up

Table 5 Stability and change in secure versus insecure cluster membership by intervention group

Depressed Intervention	*Baseline*		
		Insecure	Secure
	Insecure	4	3
Follow-up		33.3%	20.0%
	Secure	8	12
		66.7%	80.0%
			$\chi^2(1) = .62$, ns
Depressed Control	*Baseline*		
		Insecure	Secure
	Insecure	9	8
Follow-up		69.2%	34.8%
	Secure	4	15
		30.85	65.2%
			$\chi^2(1) = 3.95, p < .046$
Non-depressed Control	*Baseline*		
		Insecure	Secure
	Insecure	3	6
Follow-up		50.0%	15.4%
	Secure	3	33
		50.0%	84.6%
			$\chi^2(1) = 3.89, p < .048$

children who were classified as insecure at baseline, 66.7% were classified as secure at follow-up, indicating a shift in attachment security for those insecure children who received the intervention (see Table 5).

In addition to the ratio of child gender being equivalent across the DI, DC and NC groups (nearly 50% boys and 50% girls for each group), child gender had no effect on the distribution of secure and insecure attachments at baseline or at follow-up across the three experimental groups. Moreover, gender did not influence stability or change in security group classification from baseline to follow-up ($X^2(3) = 1.19, p = .75$).

In the DI and DC groups, we also examined whether subsequent features of the mothers' depression contributed to differences in attachment stability and change. In terms of severity of depressive symptomatology at follow-up as measured by the BDI, an ANOVA was conducted with depression group and security stability group as dependent variables. Neither the main effects nor the interaction for this analysis was significant, indicating that stability and change in attachment security within both the DI and DC were not influenced by subsequent severity of depressive symptoms.

Furthermore, we also examined whether having a subsequent depressive

episode during the period up to the follow-up assessment influenced stability/change of attachment in the DI and DC groups. Chi-square analyses within the DI and the DC groups examining stability/change in attachment groups and presence or absence of subsequent depressive episodes were both non-significant ($X^2(3) = 1.91, p = .59$, and $X^2(3) = 1.42, p = .70$, for DI and DC groups respectively). This finding suggests that subsequent depressive episodes in the depressed mothers did not account for the differences in attachment outcome observed.

Although change in attachment security as assessed by mothers on the AQS was found for the DI group, DI mothers were not globally more positive in their evaluations. Specifically, the DI and DC groups continued to have higher rates of depressive symptomatology as measured by the BDI at follow-up relative to the NC group ($F(2,105), p < .0001$), and the DI and DC groups did not significantly differ. Thus, the intervention did not appear to decrease maternal depressive symptoms to a greater degree in the DI as compared with the DC group, and DI mothers were not primed to use assessment instruments in an overly positive manner.

Finally, whether maternal motivation for treatment, as indicated by aspects of their participation in the intervention, influenced whether or not mothers completed the AQS at the two time periods was evaluated. In theory, mothers who were more invested in the treatment also might have been more motivated to complete the AQS. For the entire group of mothers in the DI group ($n = 46$), groups were formed based on whether the AQS was not completed at either time, at baseline or follow-up only, or at both time periods. No significant group differences were found in terms of the length of treatment ($F(3,42) = .26$, ns), number of scheduled appointments ($F(3,42) = .81$, ns), number of cancelled appointments ($F(3,42) = .94$, ns), or the ratio of held to scheduled appointments ($F(3,42) = 1.46$, ns). Thus, motivation for treatment did not appear to exert a bias on who completed the AQS at both time periods.

DISCUSSION

This investigation provides further evidence that depression in mothers is related to a higher rate of insecure attachment in their offspring (Cicchetti, Toth, & Lynch, 1995; Murray, 1992; Seiner *et al.*, 1996). Prior to the implementation of random assignment to the preventive intervention, 36.1% of the toddlers in the Depressed Control (DC) group and 44.4% of the toddlers in the Depressed Intervention (DI) group demonstrated insecurity of attachment compared with 13.3% of the toddlers in the Non-depressed Control (NC) group. In contrast, 63.9% of the toddlers in the Depressed Control (DC) group and 55.6% of the toddlers in the Depressed Intervention (DI) group were securely attached; the DC and DI groups did not differ in this regard. Among the toddlers in the NC group 86.7% were securely

attached. Intervention effectiveness was not affected by child gender or by associated features of the mothers' depression. The finding of increased insecurity of attachment in the toddlers in the DI and DC groups compared with the rate of insecurity in other studies of attachment in the offspring of mood-disordered mothers may, in part, be due to the fact that all mothers in the two depressed groups in this investigation must have experienced a major depressive disorder at some time during their child's first 1.5 years of life in order to meet inclusion criteria for this study. Several prior studies of maternal depression and attachment security utilized less stringent diagnostic criteria for maternal depression, thereby possibly contributing to lower rates of attachment insecurity in their offspring (see Cicchetti *et al.*, 1995, for a review). The fact that, prior to the initiation of the intervention, the two depressed groups did not differ from each other in terms of attachment security provides evidence that the random assignment procedure was effective.

A number of factors may account for the high percentage of attachment security in the NC group. It is possible that maternal assessments of toddlers' behavior may not capture some of the more subtle aspects of interaction that can be identified through experimental coding of videotaped interactions. If true, then access to videotaped interactions would most likely also have resulted in a decreased percentage of secure attachment in the DI and DC groups, thereby maintaining the substantial differential between attachment security in toddlers with depressed and non-depressed mothers. Additionally, the NC group is likely to have been more high-functioning than the typical normative group given the NC group's middle-to-upper socioeconomic status and the absence of current and past mental disorder. In fact, the proportion of securely attached children in the NC group is very similar to that found in the investigation of Murray (1992) where mothers with psychiatric histories were similarly excluded from study participation.

Importantly, the current investigation provides support for the potential malleability of attachment insecurity. Toddlers of depressed mothers who received TPP evidenced rates of secure attachment that were no different from those of the non-depressed control group following the conclusion of the intervention. This is especially impressive given the fact that the absence of any current or prior psychopathology in the NC group allows it to be characterized as a 'super control' group. Specifically, 74% of the DI group and 80% of the NC group manifested a secure attachment post-intervention. Conversely, only 53% of the DC group were rated as securely attached. Furthermore, there was a trend toward a higher percentage of secure attachment in the DI than in the DC group. The failure to attain statistical significance appears to be related to limitations associated with the sample size. The 29.6% improvement in the rate of attachment security of the DI group, relative to the DC group, is noteworthy for demonstrating the effectiveness of the preventive intervention. Because normative samples always include children with insecure attachments, there is an upper bound on expected levels

of attachment security. Therefore, in order to obtain a substantially higher rate of improvement, the DI group would need to function better than the 'super control' NC group.

Additionally, issues related to the continuity of attachment security pre- and post-intervention possess important implications for prevention and intervention. The TPP intervention was effective at modifying attachment insecurity and in maintaining existing security in the toddler offspring of depressed mothers. Conversely, offspring of depressed mothers not receiving the TPP intervention were less likely than intervention offspring to maintain secure attachments at the post-intervention assessment. These findings emphasize the importance of providing preventive interventions to offspring of depressed mothers so as to minimize the likelihood that insecurity will emerge over time. That is, even if offspring are securely attached early in life, the parenting milieu that accompanies maternal depression, even once an active episode has remitted, may mitigate against the continuance of their secure attachment.

In view of the findings on the effectiveness of TPP, it becomes important to try to ascertain why this is one of the first interventions, if not the first, found to effectively improve security of attachment in young children. One possibility lies in the characteristics of the sample. Even though these mothers were struggling with a major depressive disorder and many associated contextual risk factors, they had fewer stressors than typical in populations frequently participating in preventive interventions. For example, the majority of women were married, had a post-high school education, and were not members of the lower socioeconomic strata. Therefore, they may have been better able to utilize an insight-oriented mode of therapy than women confronted with a multitude of daily living challenges.

Additionally, the selection of a sample with fewer risk factors than that present in multi-problem populations allowed therapists to provide a 'pure' form of therapy without needing to depart from the intervention protocol to address crisis situations. Because TPP sessions revealed that many of the depressed mothers in this investigation themselves had histories of negative caregiving and accompanying unresolved issues from childhood, the ability to maintain a focus on the dynamic roots of interactional patterns and to explore the current impact of past history on caregiving is considered to be of paramount importance in the success of this intervention. We speculate that as mothers became freed from the 'ghosts from their pasts' their internal working models became more positive and they were increasingly able to focus on the present, including their relationship with their child. Moreover, as this occurred, we believe that mothers were better able to derive pleasure from their offspring and that, consequently, they were invested in fostering and maintaining positive interactions. As mothers became more grounded in the present, we also believe that they were more sensitive to their children and better able to respond to the cues of their offspring. It remains an open, and critical, question as to whether this intervention would be equally

effective with a more high-risk population of depressed mothers (i.e., depressed and impoverished mothers).

Several possible limitations in our methodology must be addressed. As noted, despite the fact that respondents and non-respondents on the AQS were comparable on most sociodemographic and risk indices, nonetheless it was found that those mothers who did not complete the AQS were characterized by increased stress. Therefore, it is possible that the attachment relationships of these mothers would be less likely to improve as a function of intervention. However, because non-responders were equally distributed in both DI and DC groups, it is unlikely that this limitation would impact upon the intervention efficacy. Furthermore, maternal depression rather than contextual sources of stress has been shown to be a more important predictor of attachment insecurity (Cicchetti *et al.*, 1998; Seiner *et al.*, 1996).

Relatedly, it could be argued that Strange Situation classifications would provide a more stringent test of the efficacy of the intervention. In our view, however, the utilization of the AQS is not a limitation, rather, it is a different method for assessing attachment. In fact, this methodology, with its demonstrated utility in evaluating an attachment-theory based preventive intervention, possesses implications for its utility with other programs of intervention. Because the Strange Situation is time-intensive with respect to implementation and coding, it may be unfeasible for some investigative groups to employ that procedure, especially in clinical trials conducted in community settings. It is unlikely that the maternal reports were biased because the Q-set method, unlike face-valid, self-report measures, requires the respondent to make forced-choice decisions across items, thereby reducing potential for biased responding. Moreover, mothers were not informed as to what constitutes secure attachment and they were unaware of our research hypotheses. Additionally, mothers were not trained in attachment theory nor knowledgeable about the security and dependency criterion ratings for the AQS. Thus, it is improbable that demand characteristics affected maternal ratings of attachment security. In this regard, the non-didactic nature of the intervention provided becomes important. Unlike strategies that strive to teach sensitive responding or utilize modelling, the TPP intervention never provided such techniques. Although it could be argued that the reports of DI mothers were affected by their belief that they wanted to 'look good' as a function of participation in the intervention, such an interpretation does not appear to be feasible. It is just as likely that mothers who knew they did not receive the intervention would want to demonstrate that their children were doing well to assuage any guilt they might be experiencing regarding the effects of their depression on their child. Moreover, the fact that DI mothers did not report fewer depressive symptoms as a function of participating in the intervention further mitigates against a 'faking good' interpretation of the AQS findings.

In summary, the current investigation provides compelling evidence on the risks to secure attachment faced by offspring of depressed parents. Importantly, however, support has been obtained for the effectiveness of an

attachment-theory based model of intervention in diverting children from a negative developmental trajectory. In the absence of intervention, it is not unlikely that these young offspring would develop a depressotypic organization that could ultimately eventuate in depression or other forms of psychopathology (Cicchetti & Toth, 1998). The present investigation underscores the necessity of preventing the coalescence of a multitude of risk factors associated with maternal depression that may conspire to undermine adaptation. The examination of maternal representations, mother–child interactional tasks, and child Strange Situation data will further elucidate the impact of TPP on child attachment. Additionally, future evaluations of the youngsters who participated in this preventive intervention will be needed in order to determine whether TPP was effective in fostering a sustained positive developmental course.

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