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## Attachment for Infants in Foster Care: The Role of Caregiver State of Mind

Mary Dozier, K. Chase Stovall, Kathleen E. Albus, and Brady Bates

The concordance between foster mothers' attachment state of mind and foster infants' attachment quality was examined for 50 foster mother–infant dyads. Babies had been placed into the care of their foster mothers between birth and 20 months of age. Attachment quality was assessed between 12 and 24 months of age, at least 3 months after the infants' placement into foster care. The two-way correspondence between maternal state of mind and infant attachment quality was 72%,  $\kappa = .43$ , similar to the level seen among biologically intact mother–infant dyads. Contrary to expectations, age at placement was not related to attachment quality. Rather, concordance between maternal state of mind and infant attachment was seen for relatively late-placed babies, as well as early placed babies. These findings have two major implications. First, following a disruption in care during the first year and a half of life, babies appear capable of organizing their behavior around the availability of new caregivers. Second, these data argue for a nongenetic mechanism for the intergenerational transmission of attachment.

### INTRODUCTION

Babies entering foster care are faced with the task of forming attachments to new primary caregivers. When placed later than birth, these infants have often experienced problematic rearing conditions as well as disruptions in their previous caregiving relationships. It is conceivable that these previous experiences diminish foster infants' chances of forming trusting relationships with new caregivers. It is possible, however, that these infants organize their attachment behavior around the availability of their new caregivers. In this study we examined the nature of the attachments formed by these foster infants with their new surrogate caregivers. Little research on foster infants' attachments to their caregivers has yet been reported in the literature. Nonetheless, the extensive literature regarding intact dyads, as well as the more limited literature regarding adopted infants, and infants with other-than-primary caregivers, are useful in suggesting hypotheses regarding foster infant attachments.

### Attachment

Infants in biologically intact dyads organize their attachment behaviors around the availability of their caregivers. When infants find caregivers to be available in times of need, they develop expectations that caregivers will be available when needed in the future. Behaviorally, these infants then seek out the comfort they need (Sroufe, 1989) from caregivers, with the confident expectation that they will be soothed. Such infants are classified as having secure attachments to their caregivers (Ainsworth, Blehar, Waters, & Wall, 1978).

When caregivers are not responsive to infants' needs for reassurance, their babies do not develop confident expectations regarding parental availability. Instead, these babies develop alternative strategies for interacting with their parents when distressed. Some infants turn away from caregivers under conditions of moderate stress, giving the appearance of not needing nurturance. These infants are classified as having avoidant attachments. Other infants show a pattern of seeking out caregivers while simultaneously resisting contact, and are classified as having resistant attachments. Finally, some infants show a breakdown in strategy when they are distressed and in their caregivers' presence, displaying behaviors that appear disoriented or disorganized (Main & Solomon, 1990). These infants are classified as having disorganized attachments. Because disorganized attachment is seen as a breakdown in strategy, infants who are classified as disorganized receive a secondary classification of secure, avoidant, or resistant.

Attachment quality is considered important by attachment researchers because it reflects the quality of the infant's relationship with the caregiver, and also because it is associated with the child's later interpersonal functioning. Children who develop secure attachments to caregivers show more competent problem-solving skills as toddlers (Matas, Arend, & Sroufe, 1978), more independent and confident behaviors with teachers as preschoolers (Sroufe, 1983), and more competent interactive behaviors with peers at school age (Elicker, Englund, & Sroufe, 1992) than do other children. Attachment strategies that are insecure but

organized (i.e., avoidant and resistant attachments) may not place children at substantially increased risk for later disorder (e.g., [Lewis, Feiring, McGuffog, & Jaskir, 1984](#); [Lyons-Ruth, Alpern, & Repacholi, 1993](#)). Those children with disorganized attachments, however, are at risk for a host of problematic outcomes, including aggressive behavior with peers ([Lyons-Ruth et al., 1993](#); [Lyons-Ruth, Easterbrooks, & Cibelli, 1997](#)) and dissociative symptomatology evidenced throughout childhood ([Carlson, 1998](#)). Identifying predictors of disorganized attachment is, therefore, of particular importance.

*Maternal state of mind and infant attachment.* Among biologically intact mother–infant dyads, the strongest predictor of infant attachment found thus far is the caregiver’s state of mind with regard to attachment ([van IJzendoorn, 1995](#)). Attachment state of mind refers to the way in which adults process thoughts and feelings regarding their own attachment experiences. State of mind is assessed through a process of discourse analysis developed by Main and colleagues ([Main & Goldwyn, 1998](#)).

Adults who value attachment and are coherent in processing their own attachment experiences are classified as having autonomous states of mind. As parents, these adults are most likely to have infants who are securely attached to them ([van IJzendoorn, 1995](#)). Adults who are not coherent in their processing of attachment-related experiences are said to have non-autonomous states of mind. These adults violate rules of conversational discourse in their discussion of attachment experiences, with the violations taking one of several forms. Some adults idealize attachment experiences and attachment figures, showing a lack of coherence in terms of the consistency and completeness of their discourse regarding attachments ([Main & Goldwyn, 1998](#)). These adults are classified as having dismissing states of mind with regard to attachment. Parents with dismissing states of mind are most likely to have infants with avoidant attachments to them ([van IJzendoorn, 1995](#)). A second form of violation occurs among adults who show angry involvement with attachment figures, or ramble in their discourse, providing excessive, irrelevant detail in their discussion of attachment issues. These adults are classified as having preoccupied states of mind, and are somewhat more likely than others to have infants with resistant attachments. Finally, a third form of violation occurs among adults who show a breakdown in reasoning or discourse when discussing a loss or trauma. These adults are classified as unresolved, and are likely to have infants with disorganized attachments ([van IJzendoorn, 1995](#)). Parallel to infant disorganized attachment, unresolved state of mind is assumed to

represent a breakdown in strategy; thus, a secondary (autonomous, dismissing, or preoccupied) classification is given to adults classified as unresolved.

Associations between parental state of mind and infant attachment quality have been assessed in a number of investigations. In a meta-analysis of 18 samples, [van IJzendoorn \(1995\)](#) found a concordance of 75%,  $\kappa = .49$ , between parental state of mind and infant attachment security when two categories (autonomous/nonautonomous and secure/insecure) were considered. When four categories of parental state of mind and infant attachment security were considered, there was a concordance of 63%,  $\kappa = .42$ .

It has generally been assumed that unresolved state of mind yields more influence on parenting than the secondary autonomous, dismissing, or preoccupied state of mind ([Main & Hesse, 1990](#)). Main and Hesse proposed that parents who are unresolved tend to behave in ways that are frightening to children. Their children are thus disorganized in the face of threat because they need comfort from caregivers, but caregivers are frightening to them. Recent findings of [Schuengel, Bakersman-Kranenburg, and van IJzendoorn \(1999\)](#), however, suggest the possibility that this link between unresolved maternal state of mind and infant disorganized attachment may be limited to those unresolved mothers with nonautonomous secondary classifications. [Schuengel et al.](#) found that unresolved mothers with secondary autonomous classifications displayed low levels of frightening behaviors toward their infants relative to other caregivers, and were not at increased risk for having disorganized infants.

*Questions regarding genetic factors.* Some researchers have questioned whether the association between caregiver state of mind and child attachment is a function of biological relatedness or shared temperament (e.g., [Fox, 1995](#)), rather than the caregiving environment. Although temperament has not been strongly associated with infant attachment quality (e.g., [Goldsmith & Alansky, 1987](#)), the possibility of some form of genetic transmission is difficult to rule out. There are no studies reported in the literature that examined differential predictability from maternal state of mind to infant attachment quality for monozygotic and dizygotic twins. However, several studies have compared concordance of attachment quality for twins and for siblings ([Goldsmith & Campos, 1990](#); [Minde, Corter, Goldberg, & Jeffers, 1990](#); [Vandell, Owen, Wilson, & Henderson, 1988](#); [van IJzendoorn et al., 2000](#)), and failed to provide strong support for the importance of genetic factors in attachment quality. In [Ricciuti’s 1992](#) re-analysis of three twin data sets ([Goldsmith & Campos, 1990](#); [Minde et al., 1990](#); [Vandell et](#)

al., 1988), 78% of the dizygotic infant pairs were concordant for attachment quality and 66% of the monozygotic infant pairs were concordant. In a meta-analysis of 138 sibling pairs, van IJzendoorn (1995) found that the level of concordance between siblings was 62% using the two-way classification scheme, with discordance partially attributable to differences in maternal sensitivity for the two siblings.

If genetic transmission is the primary source of the covariation between maternal state of mind and infant attachment security, little association should be found among non-biologically related mother–infant dyads. Although negative findings for infants in foster care could be attributable to a host of factors, including prenatal environment, early experiences of maltreatment, and the effects of relationship disruption, strong positive findings would provide compelling evidence that genetic factors are not the primary source of intergenerational transmission of attachment.

#### Children's Attachments to Non-Biologically Related Caregivers

Attachment quality of children with non-biological caregivers has been investigated for children placed soon after birth with adoptive parents (Juffer & Rosenboom, 1997; Singer, Brodzinsky, Ramsay, Steir, & Waters, 1985), for children placed with adoptive parents after extended stays in orphanages (Chisholm, 1998; O'Connor, Bredenkamp, & Rutter, 1999), for children on kibbutzim with metaplut (Sagi et al., 1995), and for children with child-care providers (Howes & Hamilton, 1992). These various investigations are useful in suggesting the range of possible outcomes for foster children forming new attachments to surrogate caregivers.

*Attachment of early adopted children.* Several investigations of attachment security among children adopted from relatively benign conditions have been reported in the literature (Juffer & Rosenboom, 1997; Singer et al., 1985). Juffer and Rosenboom found that of Asian and South American children adopted before 6 months of age by parents in the Netherlands, 74% were classified as secure. Singer et al. reported a relatively lower percentage of secure infants (52%) among a sample of 56 babies between the ages of 3 days and 10 months who were adopted by parents in the United States. Because the coding of disorganized attachment is a relatively new addition to the coding scheme, neither of these groups reported disorganized attachments among their samples. Juffer, Stams, Bakermans-Kranenburg, and van IJzendoorn (1999), however, found a disproportionately high percentage of disorganized attachments

in a subsequent investigation of a small subset of their sample.

These two studies suggest that attachment quality among some adopted children may be compromised, although the findings are not consistent and the underlying reasons unclear. Findings reported to date do not make it possible to disentangle the effects of adoptive parent state of mind, timing of relationship disruption, and previous relationship experiences on the child's attachment quality.

*Children adopted following extreme privation.* Following extended stays in the extreme conditions of Romanian orphanages, children have been studied in their adoptive homes in the United Kingdom, Canada, and the United States. Chisholm (1998) found that 66% of children adopted by 4 months of age developed secure attachments to their adoptive parents. This figure is not significantly different from that found for a control group of nonadopted children, 58% of whom developed secure attachments. Of children who had been in the institutional setting for at least 8 months, however, only 37% developed secure attachments to their adoptive parents. Further, these late-placed children showed disproportionately high incidences of disorganized attachments and indiscriminately friendly behavior with strangers.

Several possibilities are suggested for the current investigation of children placed in foster care. First, it is possible that the timing of the child's placement in surrogate care is central to the child's ability to organize attachment around the new caregiver's availability. On the other hand, it is possible that the duration of inadequate care, rather than the timing of the new relationship's formation, is most important to the child's ability to organize attachment behavior. Inadequacy of care might best be considered along a continuum (Cicchetti & Barnett, 1991), with Romanian institutional care representing the extreme. The previous care of children placed into foster care falls along the continuum, with no children likely to be as emotionally neglected as most were in the Romanian institutions.

*Children's attachments to secondary attachment figures.* Findings from day care and kibbutzim settings suggest that children are somewhat less likely to form secure relationships with professional caregivers compared with parents (Howes & Hamilton, 1992; Sagi, 1985; Sagi et al., 1995). Foster parents might be seen as fitting into this general category of professional caregivers. If so, and if this finding of lower levels of secure attachments is robust, foster children might be expected to show disproportionately high levels of insecure attachment to their foster parents. On the other hand, foster parents differ from day care

and kibbutzim providers in that they are the primary caregivers for the duration of the child's placement.

Similar to findings with biologically related dyads, responsive and sensitive caregiving on the part of professionals nonetheless predicts the development of a secure infant-caregiver relationship (Goosens & van IJzendoorn, 1990). This finding suggests that children organize their attachment behaviors around the availability of the caregivers currently providing care. For foster children, this finding suggests that foster parent availability should affect children's organization of attachment behaviors with their new caregivers. The limits of this finding, however, have not been explored. It is possible that children with problematic early experiences carry forward their models of relationships in a less flexible way than many other children. In this case, depending on the child's history of caregiving, foster parent availability may not be expected to affect child expectations for new relationships to a great extent.

Howes and Hamilton (1992) reported that day-care children who experienced a change in teachers between 18 and 24 months of age were rated as less secure with teachers at both 24 and 30 months compared with children who did not experience a change. This finding may well have implications for the effects of disruptions in relationships with primary, as well as secondary, attachment figures.

*Children's developing attachments to foster parents.* In our lab, we examined attachment behaviors that infants displayed toward their foster mothers using a diary methodology (Stovall & Dozier, 2000). Attachment behaviors in a sample of 38 foster mother-infant dyads were examined on a daily basis for a period of 60 days following the child's placement. Infants placed at younger ages (6–12 months) showed more secure behaviors than those placed later (12–20 months), and children placed with mothers with autonomous states of mind showed more secure behaviors than those placed with nonautonomous foster mothers. Further, younger children's attachment behaviors stabilized more quickly than did those of older children. Stable attachment behaviors emerged within the first 2 weeks of placement for most younger infants, contrasted with up to 2 months for older infants. Foster parents tended to behave in ways that complemented their babies' behavior, with even autonomous foster parents providing little nurturance to children who appeared not to need it. Older infants seemed to take the lead in this "relationship dance" (Stern, 1977), overshadowing foster parents' contributions to the dance. This transactional pattern seemed likely to be self-perpetuating, with older infants continuing to have low expectations for

nurturing care, and continuing to behave in ways that did not elicit nurturance.

## The Present Study

These various findings suggest several possibilities regarding foster children's attachments to their new caregivers. First, after a period of adjustment and consolidation, foster infants may organize their attachments around the availability of their new caregivers. If so, we would expect their newly consolidated attachments to foster mothers to be largely concordant with their foster mothers' state of mind with regard to attachment. A second possibility is that the effects of foster infants' earlier caregiving experiences and disruptions in caregiving may be so potent that current caregiver characteristics are eclipsed. If so, there should be little concordance between caregiver state of mind and foster infant attachment. A third possibility is that there is some concordance between foster mother state of mind and foster infant attachment, but only when children were placed into care early (before about 1 year of age). These possibilities were explored in the present research.

## METHOD

### Overview

Fifty foster infant-mother dyads participated in this study. All were part of a larger longitudinal study of the effects of interventions for foster parents, but none of the participants had yet received intervention services. Foster mothers completed the Adult Attachment Interview (AAI) in their homes. Foster infants and their foster mothers participated in the Strange Situation between the ages of 12 and 24 months, at least 3 months after placement in the foster home.

### Participants

All 50 infants had been placed with their caregivers between birth and 20 months of age, with a mean age at placement of 7.7 months ( $SD = 6.2$ ). Twenty-nine of the children were males and 21 were females. Most (64%) of the infants were African American, with 28% European American, and 8% Hispanic. Similarly, most (64%) of the foster mothers were African American, with the remaining 36% European American. Most (88%) of the dyads were ethnically matched. Case records indicated that children were placed in foster care for one or more of the following reasons: neglect (62%), parental substance abuse (36%), family instability (16%), abandonment (14%), inadequate

housing (10%), parental incarceration (10%), physical abuse (6%), and sexual abuse (2%). Twenty-eight of the children were in their first foster placement, 17 were in their second, and 5 had been in more than two ( $range = 3-5$  placements).

Foster mothers ranged in age from 26 to 69, with a mean of 47 years ( $SD = 12$ ). The range in the number of foster children for whom they had cared was from 1 to 80, with a mean of 17, and a median of 6. At the time of participation, the number of foster children in their homes ranged from 1 to 5, with a median of 2. Family income for foster families averaged \$36,000, ranging from the lowest income category in our study (less than \$10,000;  $n = 2$ ) to the second highest income category (\$60,000–\$100,000;  $n = 2$ ). Family incomes were rather evenly distributed in the income categories between \$10,000 and \$50,000. Half (25) of the foster mothers were married or living with a partner, and half (25) were single (widowed, divorced, or never married). None of the foster mothers were biologically related to the foster infants.

## Measures

*Adult Attachment Interview.* The AAI (George, Kaplan, & Main, 1996) is a semistructured interview designed to assess caregivers' state of mind with regard to attachment. In the interview, foster mothers were asked to describe their relationships with their parents when they were young, to instantiate descriptions with specific memories, to recall incidences of distress, and to conceptualize relationship influences. The time required to administer the interview ranged from 45 to 70 min. When possible, foster mothers were administered this interview when study children were first placed in their care. For nearly half of the foster mothers ( $n = 22$ ), these interviews had been conducted when a previous child from the larger research project was in their care. Therefore, AAI's were administered between 31 months prior to the study child's placement to 10 months following the study child's placement. The median time of administration was .8 months following the study child's placement ( $M = .8$ ,  $SD = 8.29$  months). Because the stability of state of mind classifications is high (Bakermans-Kranenburg & van IJzendoorn, 1993), differences in timing of administration were not considered important.

Using the Main and Goldwyn (1998) system, foster mothers were classified as autonomous with regard to attachment when they were generally coherent in their discourse, and showed a valuing of attachment. Foster mothers were classified as dismissing when they showed a devaluing or dismissing of the impor-

tance of attachment, and were likely to show a lack of recall for attachment experiences, and/or an idealization of attachment figures, and/or imperturbability. Foster mothers were classified as preoccupied when their discourse was characterized by angry involvement with attachment figures, or by rambling speech. Finally, they were classified as unresolved when they showed lapses in monitoring of reasoning or discourse regarding a loss or trauma.

Dismissing, autonomous, and preoccupied classifications are stable over periods ranging from 1 to 15 months, with the unresolved category showing slightly lower levels of stability than other categories (Bakermans-Kranenburg & van IJzendoorn, 1993; Main, 1996; Sagi et al., 1994). Interrater agreement on classifications is well over 80%, and classifications are independent of interviewer, and unrelated to autobiographical memory, verbal or performance measures of intelligence, or social desirability (Bakermans-Kranenburg & van IJzendoorn, 1993; for an overview, see van IJzendoorn, 1995). Mothers' AAI classifications measured both before and after their children's birth predict infant security in ways that are consistent with attachment theory (Benoit & Parker, 1994; Fonagy, Steele, & Steele, 1991; Ward & Carlson, 1995).

Interviews were audiotaped and transcribed by professional transcriptionists. Four raters coded the transcripts using the classification system developed by Main and Goldwyn (1998). All coders had attended the 2-week training course sponsored by Mary Main and Erik Hesse and passed the reliability test with agreement of at least 85% with Main and Hesse. A random set of 12 AAI's was double coded, with agreement on these interviews of 100%,  $\kappa = 1.00$ , for three-way classification, and 75%,  $\kappa = .61$ , for four-way classification. Given that reliability for unresolved status was lower than for other categories, all interviews were double coded for unresolved status, and disagreements conferenced. Coders were blind to child-attachment classification and to other information regarding the participants.

*Strange Situation.* The Strange Situation (Ainsworth et al., 1978) is a laboratory procedure designed to stress infants, allowing assessment of infants' reliance on the caregiver when they are distressed. Infants are separated from the caregiver on two occasions and then reunited, with attachment behaviors (infants' proximity seeking, contact maintenance, resistance, and avoidance) coded during the reunion episodes. Infants are classified as secure if they seek out whatever contact is needed and are calmed readily by their caregiver; as avoidant if they turn away from their caregiver when distressed; and as resistant if they show

an angry resistance to caregivers. Infants in this study were also rated on disorganization, using the criteria developed by Main and Solomon (1990). Disorganization is coded when the infant strategies for dealing with distress break down in the caregiver's presence, or when infants appear to lack a strategy for dealing with distress. Examples of disorganization include an infant backing up against the wall when the parent enters the room, wandering around the room aimlessly, or appearing dazed and motionless for a long period of time (Main & Solomon, 1990). The child is classified as disorganized when one or more events meet threshold criteria. Children classified as disorganized are also given a secondary classification of secure, avoidant, or resistant.

At the time the children participated in the Strange Situation they were between the ages of 12 and 24 months ( $M = 16.5$ ,  $SD = 4.1$ ), and had been in the care of their current foster parents between 3 and 21 months ( $M = 9.2$ ,  $SD = 5.2$ ). Three coders, blind to other study data, coded the Strange Situations. All three had attended the training course on coding of organized strategies (secure, avoidant, resistant) offered by Alan Sroufe, and the training course on disorganized coding offered by Mary Main. Coders had also passed reliability tests for classifying organized and disorganized strategies offered by Sroufe, reaching at least 80% agreement with expert coders. A random set of 12 Strange Situations was double coded; agreement on these was 100%,  $\kappa = 1.00$ , for major category, and 82%,  $\kappa = .73$ , when the disorganized category was included. Given the lower reliability for the disorganized classification, all videotapes with indications of disorganized behavior were double coded and disagreements resolved by conference.

Although the Strange Situation was originally developed for use with biologically intact mother-infant dyads, several types of evidence suggest its appropriateness in assessing attachment quality among non-biologically related dyads. First, kibbutz infants tended to develop secure attachments with some metapelet and insecure attachments with others, suggesting that the Strange Situation reflects the infants' organization of attachment around the availability of the specific caregiver (Sagi et al., 1995). Second, work by Stovall and Dozier (2000) suggests that infants' attachments to new foster caregivers usually stabilize within 2 months of foster-care placement, making the assessment of attachment quality meaningful at that time.

The Strange Situation was developed for the assessment of attachment of babies between the ages of 12 and 18 months (Ainsworth et al., 1978). The procedure has been used, however, in investigations with

older babies, including those up to 24 months of age. Because we were interested in the effects of the timing of foster-care placement on attachment quality, children up to 24 months of age were included in our investigation. To ensure that any results were not attributable to our inclusion of older infants in the study, analyses that included only those children who were younger than 20 months of age, in addition to analyses that included all children were conducted.

## RESULTS

### Foster Mother AAI

Slightly more than half (54%) of the foster mothers were coded as having primary classifications of autonomous state of mind, with 22% classified as dismissing and 24% classified as unresolved. (The only mother with a preoccupied classification had a primary unresolved classification.) Of the mothers with unresolved states of mind, 58% had secondary autonomous classifications and 42% had secondary non-autonomous (4 dismissing, 1 preoccupied) classifications, representing 14% and 10% of the total sample, respectively.

### Infant Attachment Classification

About half (52%) of the children were classified as secure in the Strange Situation, with most others (34%) classified as disorganized. An additional 6% were classified as avoidant, and 8% were classified as resistant. The results from the van IJzendoorn (1995) meta-analysis were used to provide the expected distribution of attachment classifications. The proportion of children with secure attachments was similar to that reported in the meta-analysis, but the foster care sample had a larger proportion of children with disorganized attachments (Table 1).

**Table 1** Breakdown of Infant Attachment Classifications for Foster-Care Infants and Infants in the van IJzendoorn (1995) Meta-Analysis

Attachment Classification	Foster-Care Infants		Meta-Analysis Infants	
	%	<i>n</i>	%	<i>n</i>
Secure	52	26	52	287
Avoidant	6	3	21	116
Resistant	8	4	5	28
Disorganized	34	17	21	117

Note: Organized versus disorganized:  $\chi^2(1, N = 50) = 9.42, p < .01$ .

**Table 2** Concordance between Foster Mother State of Mind and Infant Attachment for Two-Way Match

Infant Attachment	Foster Mother State of Mind	
	Autonomous	Nonautonomous
Secure	23	3
Insecure	11	13

Note:  $\chi^2(1, N = 50) = 10.42, p < .01$ . Concordance = 72%;  $\kappa = .43$ .

### Associations among Foster Mother State of Mind, Infant Attachment, and Other Variables

Associations among variables of primary interest (foster mother state of mind and infant attachment) and variables that were not of direct interest in this study (e.g., foster mother age, income, racial match) were examined to determine whether variables of secondary interest should be included in subsequent analyses. Foster mother age, marital status, foster family income, the number of foster children in the foster home, the placement cause, the number of previous placements, and racial match of foster mother and child were not significantly related to foster mother state of mind, child attachment, or the concordance between maternal state of mind and child attachment,  $ps > .05$ . Only higher income was associated with higher concordance,  $p < .05$ . Given the number of comparisons conducted, this single significant finding was unimpressive. With a Bonferroni correction, this finding did not emerge as significant. As a result, these additional variables were not considered in subsequent analyses.

### Concordance between Maternal State of Mind and Infant Attachment

On the basis of Schuengel et al.'s (1999) finding that unresolved mothers with secondary autonomous

classifications are likely to have secure rather than disorganized babies, unresolved/autonomous mothers were included in the autonomous group in the first analyses. Given that most reports in the literature consider these unresolved/autonomous mothers as nonautonomous, analyses that included these mothers in the nonautonomous group were also conducted. Concordance between foster mother state of mind and foster infant attachment was examined first with the two-way match (autonomous and nonautonomous state of mind matched with secure and insecure attachment, respectively). As can be seen in Table 2, there was a 72% match, versus 52% expected on the basis of chance alone,  $\kappa = .43, \chi^2(1, N = 50) = 10.42, p < .01$ . This level of concordance was similar to that found in the van IJzendoorn meta-analysis for biologically intact dyads. When unresolved foster mothers with secondary autonomous ratings were included in the nonautonomous group (rather than in the autonomous group), findings remained significant, with a 68% concordance,  $\kappa = .36, \chi^2(1, N = 50) = 6.44, p < .05$ .

The findings for the 43 infants assessed at 20 months or younger in the Strange Situation were similar to those for the full sample. The two-way correspondence between maternal state of mind and infant attachment was 72%,  $\kappa = .45, \chi^2(1, N = 43) = 9.92, p < .01$ , when unresolved/autonomous mothers were included in the autonomous group, and 70%,  $\kappa = .40, \chi^2(1, N = 43) = 6.75, p < .01$ , when they were included in the nonautonomous group.

As can be seen in Table 3, concordance for the four-way match was 56% when unresolved/autonomous mothers were included in the autonomous group,  $\kappa = .27, \chi^2(6, N = 50) = 13.77, p < .05$ . When unresolved/autonomous mothers were included in the nonautonomous group, the concordance was 52%,  $\kappa = .24, \chi^2(6, N = 50) = 13.06, p < .05$ . Findings for the smaller sample of infants assessed before 20 months revealed a four-way correspondence of 53%,  $\kappa = .25, \chi^2(6, N = 43) = 15.99, p < .05$ , when unresolved/autonomous

**Table 3** Concordance between Foster Mother State of Mind and Infant Attachment for Four-Way Match

Infant Attachment	Foster Mother State of Mind			
	Autonomous	Dismissing	Preoccupied	Unresolved/ Nonautonomous
Secure	23	2	0	1
Avoidant	2	1	0	0
Resistant	2	2	0	0
Disorganized	7	6	0	4

Note:  $\chi^2(6, N = 50) = 13.77, p < .05$ . Concordance = 56%;  $\kappa = .27$ .

mothers were included in the autonomous group, and 51%,  $\kappa = .23$ ,  $\chi^2(6, N = 43) = 14.25$ ,  $p < .05$ , when they were included in the nonautonomous group.

Given that disorganized attachment appears to represent a significant risk for later psychopathology, the link between maternal state of mind and children's development of organized (secure, avoidant, and resistant attachments) versus disorganized attachments was examined. Only 21% of foster mothers with autonomous states of mind had children with disorganized attachments, whereas 62.5% of foster mothers with nonautonomous states of mind had children with disorganized attachments,  $\kappa = .41$ ,  $\chi^2(1, N = 50) = 8.52$ ,  $p < .01$ .

#### Age at Placement

Age of placement in foster care was not associated with infant attachment, either as a main effect or as an interaction with maternal state of mind. Given that previous findings had suggested that age at placement would be an important predictor of infant security, this null result was explored carefully. Whether considered as a continuous or as a dichotomous variable, placement age did not approach significance as a predictor of organized/disorganized attachment or secure/insecure attachment, or as a predictor of concordance between foster mother state of mind and infant security. The mean age at placement for babies with organized attachments was 7.3 months, and for babies with disorganized attachments, it was 8.6 months. This difference did not approach significance,  $p > .40$ .

## DISCUSSION

Foster infants' attachment security was concordant with foster mothers' state of mind at levels similar to that seen among biologically intact dyads. These results are striking, and have important implications both for children placed in out-of-home care, and for attachment among intact mother–infant dyads. These results suggest that when placed in the first year and a half of life, foster children can organize their attachment behaviors around the availability of their new caregivers. When placed later than birth, most children in our sample had been exposed to neglect, and some to abuse, as well as up to five changes in caregivers. Nonetheless, when placed with autonomous caregivers, these children often formed secure attachments.

Among biologically intact dyads, it has not been possible to differentiate clearly between a genetic and environmental explanation for the concordance be-

tween maternal state of mind and infant attachment. It was plausible that the concordance between maternal state of mind and infant attachment reflected some tendency shared between mother and child to react to stimuli in parallel ways. For example, Fox (1995) suggested that the temperamental (or personality) characteristics of reactivity and affective bias likely represented the mechanism by which state of mind and attachment were associated. Twin and sibling studies (e.g., Ricciuti, 1992; van IJzendoorn et al., 2000) have failed to provide consistent support for a genetic mechanism, although a genetic argument is hard to rule out in the absence of findings from nonrelated dyads. This study's findings provide compelling evidence that it is maternal characteristics, rather than shared temperament or other genetically linked characteristics, that primarily determine children's attachment strategies.

Given our previous findings (Stovall & Dozier, 2000), we had expected age at placement to be a powerful predictor of infant attachment quality. In our previous study, we found that foster mothers reported more insecure behaviors during the first 2 months of placement among babies placed at older ages than among babies placed at younger ages, regardless of foster mothers' state of mind. In this previous study, a diary methodology that relied on the foster mother's report of child and caregiver behaviors was used. This methodology allowed for examination of the process by which children formed new attachments. In the current study, using the Strange Situation, the "consolidated attachment" of infants who had been with their foster mothers for at least 3 months was assessed. The results suggest that when babies are placed in foster care during the first 20 months of life, the age at which they are placed does not affect the quality of attachments formed with new caregivers. It seems that even though late-placed foster infants initially push their caregivers away (as reflected in Stovall and Dozier's diary data), eventually the children organize attachment behavior around the availability of their new caregivers.

There have been relatively few studies of infants' attachments following the disruption of a primary relationship. At some level, therefore, the implications of our current findings are unclear. Essentially, we do not know what attachment reflects in terms of its organizational function and its predictive value, for infants who have experienced disrupted attachments. For children from stable, intact dyads, attachment serves to organize experience (Sroufe, 1983) and to generalize to feelings about the self and others (Cassidy, 1988; Matas et al., 1978; Sroufe, 1989). For children with disrupted relationships, it is unclear what role attachments to new surrogate caregivers play in the

organization of feelings about self and others. Plausibly, the disruption of previous relationships, or the poor quality of previous relationships, may have made indelible imprints on children. On the other hand, children who form secure attachments to surrogate caregivers following previous relationship failures may be demonstrating the ability to rework models of self and other. These questions can only be addressed by longitudinal studies of the impact of children's new attachments to surrogate caregivers on later representations of self and other.

It is important to note that the proportion of children with disorganized attachments was larger than typically seen among normal samples. It is interesting to note, however, that children were only at increased risk for disorganized attachments when their caregivers had nonautonomous states of mind. Only 21% of children with autonomous caregivers had disorganized attachments, a figure that is not especially large for any sample. The majority of children who had caregivers with nonautonomous states of mind, however, had disorganized attachments. Even caregivers with dismissing states of mind were likely to have children with disorganized attachments. Among biologically intact dyads, mothers with dismissing states of mind are most likely to have babies with avoidant attachments, a status that does not confer substantial risk to a child. Whereas children in biologically intact dyads can organize their attachment behavior around the availability of a somewhat rejecting parent, most children who have experienced relationship disruption appear unable to do so. Rather, children who have experienced relationship disruption are likely to develop disorganized attachment strategies unless they are in the care of nurturing surrogate caregivers. We expect that the experience of relationship disruption is so disorganizing that only with the development of a relationship with a nurturing caregiver can the child begin to develop an organized attachment.

Given that this is the first study in the literature reporting concordance between parental state of mind and child attachment quality among children in foster care, it will be important to replicate these rather startling results. We included a wide age range of children (from 12–24 months) in the primary analyses. Because our sample was not large, we must particularly question our null results regarding age at placement. Subsequent studies should further study the importance of age at placement by looking at larger samples of children placed at various ages.

Some might question the use of the infant Strange Situation coding system for children as old as 24 months of age. Although this system was developed

for the coding of children 18 months old and younger, the system has been used in a number of studies for the coding of attachment among children as old as 24 months. We chose not to restrict the sample to children 18 months and younger because of our interest in examining the effects of age at placement. To ensure that our findings were not unduly affected by the inclusion of 20- to 24-month-old children, we reanalyzed data including only those children younger than 20 months of age.

Finally, it will be critical that these results be extended longitudinally such that the meaning of attachment can be ascertained for children who have experienced relationship disruption. Although children appear able to form secure attachments to new, nurturing caregivers after several months time, it is unclear what organizational role these attachments play in the development of information processing strategies, and in representations of self and other. Longitudinal studies of children placed with surrogate caregivers will clarify the role that new attachments play for these children following relationship disruption.

In summary, we suggest that these results speak to the strength of the human propensity for relatedness. Despite experiences of inadequate care, disruptions in care, or both, young children placed with nurturing caregivers were often able to develop trusting, secure attachments.

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