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MOTHER EXPECTATION OF BOTHER AND INFANT ATTACHMENT BEHAVIORS AS PREDICTORS OF MOTHER AND CHILD COMMUNICATION AT 24 MONTHS IN CHILDREN OF METHADONE-MAINTAINED WOMEN

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ABSTRACT: This study used a transactional model of development (Sameroff, 1975) to test whether methadone exposure, mother's expectation of her future infant's degree of bother during pregnancy, infant attachment behaviors assessed at 12 months, and mother and child communication assessed at 24 months reciprocally influence each other in a sample of 30 full-term, African American toddlers exposed in utero to methadone and 42 comparison toddlers. Toddlers were videotaped at 24 months communicating with their mothers in eight scripted situations and at 12 months participating in a separation–reunion procedure to assess attachment behaviors. Mothers in both groups were comparable on race, education, age, SES, parity, IQ, and marital status. The relation between methadone exposure and the quality of mother communication was found to be moderated by mother's expectation of her future infant's degree of bother and mediated by avoidant attachment behavior. Infants' disorganized attachment behavior predicted their own lower quality communication at 24 months regardless of methadone exposure. The organization of affect regulation in both members of the dyad can differentially affect the ways in which methadone exposure impacts on the quality of mother communication by 24 months. Results suggest that preventive intervention is most likely to succeed when both mothers and children participate.

RESUMEN: Se usó un modelo transaccional de desarrollo (Sameroff, 1975) para examinar si el haber estado expuesto al metadón, las expectativas de la madre acerca del nivel de molestias del futuro bebé durante el embarazo, la conducta de afectividad del infante evaluada a los 12 meses, y la comunicación

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entre madre e infante evaluada a los 24 meses, recíprocamente ejercían influencia sobre cada uno de estos aspectos. El grupo muestra consistió de 30 infantes afroamericanos nacidos a los nueve meses y que habían estado expuestos al metadón en el útero, y el grupo de comparación lo formaban 42 infantes. Los infantes fueron grabados en vídeo a los 24 meses en momentos en que se comunicaban con sus madres en 8 situaciones previamente determinadas, y a los 12 meses participando en un procedimiento de reunión y separación con el fin de evaluar las conductas de afectividad. Las madres en ambos grupos eran comparables en cuanto a raza, educación, edad, SES, paridad, cuociente intelectual, así como estado marital. Se pudo determinar que la relación entre el haber estado expuesto al metadón y la calidad de la comunicación materna era moderada por las expectativas de la madre acerca del nivel de molestias del futuro bebé durante el embarazo, y facilitada por una conducta afectiva esquiva. La desorganizada conducta afectiva de los infantes predijo una propia comunicación de baja calidad a los 24 meses, sin tener en cuenta el haber estado expuesto al metadón. La organización de la regulación del afecto en ambos miembros de cada díada puede diferencialmente afectar las maneras como el haber estado expuesto al metadón ejerce un impacto sobre la calidad de la comunicación de la madre a los 24 meses. Los resultados aconsejan que la intervención preventiva es la que pudiera tener más éxito cuando se da la doble participación de madre e infante.

RÉSUMÉ: Nous avons utilisé un modèle transactionnel de développement (Sameroff, 1975) pour tester si l'exposition à la méthadone, le degré de problèmes du futur bébé pendant la grossesse, les comportements d'attachement du bébé évalués à l'âge de 12 mois, et la communication entre la mère et l'enfant évaluée à 24 mois s'influencent réciproquement chez un échantillon de 30 jeunes enfants noirs américains exposés in utero à la méthadone et 42 jeunes enfants pour le groupe de comparaison. Les jeunes enfants ont été filmés à la vidéo à l'âge de 24 mois communicant avec leurs mères dans 8 situations définies par un script et à 12 mois participant à une procédure de séparation-réunion afin d'évaluer les comportements d'attachement. Les mères des deux groupes étaient comparable pour ce qui concerne la race, l'éducation, l'âge, le statut socio économique, la parité, le QI, et le situation conjugale. On a trouvé que la relation entre l'exposition à la méthadone et la qualité de la communication de la mère était modérée par ce que la mère attendait du degré de problèmes de son bébé à venir et affectée par un comportement évitant d'attachement. Le comportement d'attachement désorganisé des bébés prédisait leur propre communication de basse qualité à l'âge de 24 mois, même sans exposition à la méthadone. L'organisation de la régulation de l'affect chez les deux membres de la dyade peut affecter de manière différentielle les façons dont l'exposition à la méthadone impacte la qualité de la communication de la mère à l'âge de 24 mois. Les résultats suggèrent qu'une intervention préventive est bien plus à même de réussir lorsqu'à la fois les mères et les enfants participent.

ZUSAMMENFASSUNG: In einer Stichprobe von 30 termingeborenen afroamerikanischen Kleinkindern, die intrauterin Methadon ausgesetzt waren und 42 in einer Kontrollgruppe benutzten wir ein transaktionales Modell der Entwicklung nach Sameroff (1975), um zu testen, ob die Methadonexposition und die mütterlichen Erwartungen über das Ausmaß der Belastung des Kleinkinds während der Schwangerschaft das kindliche Bindungsverhalten, das wir mit 12 Monaten testeten und die Mutter – Kinder Kommunikation, die wir mit 24 Monaten untersuchten, einander wechselweise beeinflussen. Die Kleinkinder wurden mit 24 Monaten bei der Kommunikation mit ihren Müttern bei 8 vorgeschrieben Situationen und mit 12 Monaten als sie an einer Trennungs- Wiedervereinigungsübung teilnahmen, hinsichtlich des Bindungsverhaltens untersucht. Die Mütter beider Gruppen waren hinsichtlich Rasse, Ausbildung, Alter, sozioökonomischer Status, Intelligenzquotient und Zivilstand vergleichbar. Der Zusammenhang zwischen der Methadonexposition und der Qualität der mütterlichen Kommunikation wurde durch die mütterlichen Erwartungen bezüglich der zukünftigen Belastung des Kindes und durch ausweichendes Bindungsverhalten beeinflusst. Bei einer chaotischen Bindung des Kindes konnte eine schlechtere Qualität der Kommunikation, unabhängig von der Methadonexposition, vorausgesagt werden. Die Organisation der Affektregulation bei beiden Mitgliedern der Dyade kann die Art unterschiedlich beeinflussen in der Methadonexposition einen Einfluss auf die Qualität der Mutter Kind Kommunikation im Alter von 24 Monaten hat. Die Ergebnisse deuten an, dass eine präventive Intervention dann am ehesten helfen wird, wenn sowohl Mütter, als auch Kinder daran teilnehmen.

発達の相互作用モデル (transactional model of development, Sameroff, 1975) を用いて、メサドンへの暴露、妊娠中に母親が将来の赤ちゃんが邪魔に思う程度の予測、12 か月時に評価された乳児の愛着行動、および 24 か月時に評価された母親と幼児のコミュニケーションが、相互に影響を与えるかどうかを、在胎中にメサドンに暴露された 30 人のアフリカ系アメリカ人の満期産児と、42 人の対照児についてテストした。幼児は 24 か月時に 8 つの筋書きがある状況 scripted situations において母親とコミュニケーションしているところをビデオ録画され、そして 12 か月時には愛着行動を評価するために、分離－再会手順に参加した。両群の母親は、人種、教育、年齢、SES、同格性 parity、IQ、そして婚姻状況において、比較可能であった。メサドンへの暴露と母親のコミュニケーションの質との間の関係は、将来母親が乳児を邪魔に思う程度によって調節され、回避的な愛着行動によて媒介されることがわかった。乳児の混乱した disorganized 愛着行動は、メサドンへの暴露にかかわらず、乳児自身の 24 か月時のコミュニケーションの質が低いことを予測した。ペアの両者における感情調節の組織化は、メサドンへの暴露が 24 か月までに母親のコミュニケーションの質に影響を与えるそのやり方に、特異的に影響を与えることができる。結果から、予防的介入は、母親と子どもの両方が参加しているときに、最も成功するらしいということが、示唆された。

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Research studies that have investigated the association between prenatal drug exposure and child developmental outcomes have attempted to determine whether any adverse impact is a direct result of the teratological effects of exposure, per se, or the socioenvironmental milieu in which these children are raised. Although neonatal difficulties, especially neurobehavioral deficits, appear to be directly related to exposure, socioemotional development appears less affected by exposure, per se, but rather by the psychosocial deficits that coexist with exposure—low SES, low maternal IQ, maternal psychopathology, lack of contact with the infant's father, not being married, low maternal support, and low maternal educational level among others (Hans, 1992; Myers, Olson, & Kaltenbach, 1992; O'Connor, Kogan, & Findlay, 2002; Rodning, Beckwith, & Howard, 1991).

In contrast, other studies of prenatal drug exposure have demonstrated that prenatal drug exposure is indeed associated with negative developmental outcomes, but psychosocial risks can potentiate the risk associated with exposure. These studies have reported on the potential moderating effects of mother and infant variables on the relation between prenatal drug exposure and developmental outcomes (Freier, 1994; Hofkosh et al., 1995). For example Bernstein and Hans (1994) found that a poor quality of the mother's communication with her infant at 4 and 12 months was correlated with lower scores on three indices of the Bayley Scales of Infant Development (Bayley, 1969) at 24 months among the drug-exposed infants, but not the matched comparison infants. Thus, the poor quality of communication of the mothers using drugs had a particularly adverse impact on their infants' developmental outcomes.

Still other studies have reported on whether any maternal or infant variables could mediate the relation between prenatal drug exposure and developmental outcomes. In other words, does prenatal drug exposure adversely influence developmental outcomes indirectly—acting through some third mother or infant variable? O'Connor, Sigman, and Kasari (1992) found that the valence of infant affect and the quality of mother–infant interaction observed at 12 months mediated the relation between self-reported alcohol consumption during pregnancy and

the security of attachment also observed at 12 months. Because alcohol-consumption patterns were collected retrospectively, these findings must be interpreted cautiously. Nevertheless, this study represents a first step toward identifying potential mediating influences of prenatal drug exposure on developmental outcomes.

We decided to test a transactional model of development (Sameroff, 1975; Sameroff & Chandler, 1975) to determine whether assessments related to affect regulation in methadone-maintained mothers and their methadone-exposed infants could function as moderating or mediating influences on the quality of mother communication and child communication at 24 months. Previous attachment studies (e.g., Beeghly & Cicchetti, 1994; Booth, Rose-Krasnor, & Rubin, 1991; Morisset, Barnard, Greenberg, Booth, & Spieker, 1990) have tested the moderating or mediating differential impact of various aspects of environmental risk on child outcomes by moving forward from the most distal levels of risk (demographic variables) to the most proximal levels (maternal and child socioemotional and interactional variables); however, these studies often assume that the influence of mother and child risk is not bidirectional. In other words, maternal risk, whether treated as a distal or proximal variable, influences child risk and outcomes, but not vice versa. A transactional model instead proposes that maternal and child variables reciprocally influence each other (see also Lewis, 1990).

The prenatal assessment of the mother's expectation of her future infant's degree of bother is related to maternal affect regulation and has been associated with the quality of infant attachment behavior at 12 months (Goodman, Hans, & Cox, 1999). This variable predicted both contact-maintaining attachment behavior and avoidant attachment behavior. These two findings support previous work (Benoit & Parker, 1994; Fonagy, Steele, & Steele, 1991; Frank, Tuber, Slade, & Garrod, 1994; Levine, Tuber, Slade, & Ward, 1991; Ward & Carlson, 1995) that suggests that the quality of a pregnant woman's own mental representation—reflective of her pattern of affect regulation (Magai, 1999)—predicts her future infant's attachment quality. It is believed that a mother who expects a very high or very low degree of bother from her future infant will probably have difficulty integrating her infant's affects, most likely because she herself has difficulty acknowledging and accepting her own negative affects and integrating them with positive affects into a coherent whole. Defensive patterns of affect regulation could serve to minimize or maximize the recognition of negative affects in herself and her infant (see also Haft & Slade, 1989). A transactional model would predict that the infant's own pattern of affect regulation, itself a product of the mother's, would then influence the quality of the mother's communication, which in turn influences the infant, and so on.

This interplay of influences on the quality of mother and child communication assessed at 24 months comes at a time when mothers and toddlers are beginning to establish a "goal-corrected partnership" (Bowlby, 1982)—perspective-taking communication that serves to maximize the child's feelings of attachment security through symbolic means such as the emerging use of language within the dyad. The ability of mothers and toddlers to use emotions to signal concerns and accommodate to each other both verbally and nonverbally is closely related to the level of security within the attachment relationship (Kobak, 1999; Kobak & Duemmler, 1994). The quality of infant attachment thus has been studied as a potential moderating or mediating variable in the relation between maternal risk factors and child developmental outcomes (e.g., Lewis, 1990; Lyons-Ruth, 1996; Lyons-Ruth, Alpern, & Repacholi, 1993; Lyons-Ruth, Easterbrooks, & Cibelli, 1997). Secure infant attachment has been identified as a protective factor in language acquisition and social competence—two aspects of child communication—among preschool children at high social risk (e.g., Beeghly & Cicchetti, 1994; Booth et al., 1991; Morisset et al., 1990).

Disorganized attachment behavior has been singled out as particularly predictive of later psychopathology (e.g., Carlson, 1998; Lyons-Ruth & Jacobvitz, 1999). It is believed that at-

tachment disorganization reflects an internal working model of an unsafe and dangerous world, where expressed needs for protection are not only not forthcoming but also responded to with perceived increases in danger (Main & Hesse, 1990; Main & Solomon, 1990). Whereas organized attachment behaviors [anxious/avoidant (A), secure (B), and anxious/resistant (C)] are characterized by three corresponding patterns of affect regulation (Cassidy, 1994; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Kobak & Sceery, 1988; Main, 1990), disorganized attachment behavior (D) is characterized by affect dysregulation in which primitive anxieties associated with frightened or frightening maternal behavior produce chaotic approach/avoidance conflicts (Hesse & Main, 1999; Lyons-Ruth, Bronfman, & Parsons, 1999; Main & Hesse, 1990; Main & Solomon, 1990; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; Solomon & George, 1999). Prenatal drug exposure has been associated with both affect dysregulation (Beeghly & Tronick, 1994) and attachment disorganization (Goodman et al., 1999); however, the socioemotional processes by which maternal and infant affect regulation and infant attachment (a behavioral manifestation of affect regulation) impact on mother and child communication patterns have not been studied in a prenatally drug-exposed sample. These communication patterns set the stage for later developmental achievements such as peer and romantic relationships (Booth et al., 1991; Kobak, 1999) and linguistic competence (Beeghly & Cicchetti, 1994; Morisset et al., 1990).

In the present study, we first hypothesized that the mother's expectation of her future infant's degree of bother during pregnancy and insecure, especially disorganized, attachment behavior at 12 months might moderate the relation between prenatal exposure to methadone (a legal heroin substitute used in treatment) and the quality of mother communication and child communication observed at 24 months. We reasoned that these risk factors could place methadone-maintained mothers and their children at differential risk of developing poor communication with each other by 24 months (Bernstein, Hans, & Percansky, 1991). Because mother communication and child communication were assessed simultaneously but coded independently, we were able to use both variables as outcome measures. We were interested in finding out whether the organization of affect regulation in both members of the dyad can differentially affect the ways in which prenatal methadone exposure impacts on the quality of mother communication and child communication by 24 months.

Second, we hypothesized that these same maternal and infant risks might mediate the relation between prenatal methadone exposure and the quality of mother and child communication. We reasoned that consistent with previous work, putative neurobiological compromises that often accompany methadone exposure (Hans, 1992), coupled with putative differences in parenting perceptions of drug-dependent mothers (Escamilla-Mondanaro, 1977), would contribute to disruptions in maternal and infant affect regulation, reflected in an expectation of bother and insecure, especially disorganized, attachment behavior. These maternal and infant risks would then impact on the quality of mother and child communication at 24 months. If the hypotheses that maternal and infant affect regulation moderates or mediates the impact of exposure on communication were supported, then early intervention programs could focus their efforts on improving affect regulation in methdone-maintained mothers and their infants.

METHOD

Participants

A sample of low-income, African American pregnant women was recruited at the prenatal clinics of Chicago Lying-In Hospital at the University of Chicago to participate in a longitudinal

study (see Bernstein & Hans, 1994). All methadone-maintained women who attended these clinics were identified and participated in a screening interview with research staff. Those women who were African American, resided in the catchment area of the hospital, had no chronic medical problems or obvious mental illness, and were between the ages of 18 and 35 years were asked to participate. Twenty-eight percent of the eligible women either refused participation or withdrew their consent prenatally or during the postpartum period.

All methadone-maintained women had been chronic heroin abusers (i.e., a minimum of 6 months of use) who sought treatment either before or early during pregnancy. These women received low daily dosages ranging from 10 to 40 mg ($M = \sim 20$ mg) of methadone during pregnancy. Methadone maintenance for pregnant women has been associated with safer perinatal and postnatal outcomes than continued untreated heroin use (see Hans, 1992). Some methadone-maintained women also used other drugs during pregnancy such as heroin ($n = 8$), cocaine ($n = 2$), Valium ($n = 2$), Darvon ($n = 1$), T's and Blues ($n = 1$), or alcohol ($n = 1$). Of the 8 heroin users, 1 also used cocaine, another used alcohol, and a third used both cocaine and Valium. The other Valium user also used Darvon. Thus, two thirds ($n = 20$) of the methadone-maintained women used only methadone during pregnancy. This sample accurately represents the general population of methadone-maintained women and their patterns of drug ingestion. A completely "clean" sample would threaten external validity because of the commonality of polysubstance use in this population. Methadone maintenance continued for all these women during the 24 months following delivery. Program participation included frequent, random urine drug and alcohol toxicology screenings to confirm their drug-free status.

All comparison women who attended these clinics also were identified and participated in a screening interview with research staff. Those women whose demographic characteristics (race, age, SES, years of education, parity, IQ, and marital status; see Table 1) were comparable to women in the methadone group, resided in the catchment area of the hospital, had no chronic medical problems or obvious mental illness, and were between the ages of 18 and 35 years were asked to participate. In addition, comparison women were asked to participate if they reported alcohol intake of fewer than two drinks of alcohol per day, had no history of opioid use, and whose urine drug and alcohol toxicology screenings, performed during pregnancy, confirmed their drug-free status. Forty-five percent of the eligible women either refused participation or withdrew their consent during the postpartum period. All women consented to their participation in writing after the scope and procedures of the study were carefully explained.

The methadone-exposed infants in the sample reported in this article are typical of those infants described in the literature on opioid-exposed children (Hans, 1992). In particular, the methadone-exposed infants were born at lower birth weights ($M = 2{,}851.38$ g, $SD = 596.81$) than the comparison infants ($M = 3{,}217.19$ g, $SD = 412.55$; see Table 1). Reduced birth weight is a typical sequela of infants prenatally exposed to methadone (Hans, 1992).

At Time 1 (i.e., third trimester), 46 full-term offspring born to methadone-maintained women and 54 full-term offspring born to drug-free women were enrolled. At Time 2 (i.e., 12 months), 11 dyads among the methadone group were not used: 5 because of neonatal or postnatal death or stroke, 1 because of technical difficulties related to observing the separation–reunion procedure, and 5 because they dropped out of the study. Eight dyads among the comparison group were not used: 4 because of technical difficulties related to observing the separation–reunion procedure and 4 because they dropped out of the study. Throughout the course of this study, every effort was made to retain participants, who were provided transportation, meals, and a modest monetary payment.

At Time 3 (i.e., 24 months), 5 dyads among the methadone group were not used: 4 because

TABLE 1. *Demographic Statistics of Methadone-Maintained and Comparison Mothers and Their Children*

	Methadone Exposure					
	Methadone[a]		*Comparison*[b]		*Statistics*	
Variable	M	SD	M	SD	χ^2	t
Mothers[c]						
Race (%African American)	100.00		100.00			
Education (years)	11.10	1.56	11.40	1.33		.89
Hollingshead SES[d]	4.50	.68	4.33	.79		.94
Hollingshead SES: Mother's family of origin[d]	4.53	.73	4.48	.55		.38
WAIS IQ	88.43	9.28	89.43	12.23		.38
Married (%)	23.33		33.33		.85	
Expectation of bother[d]	15.35	4.33	11.75	4.00		3.26**
Children						
Birth weight (g)	2851.38[e]	596.81	3217.19	412.55		3.06**
Gender (% male)	46.67		57.14		.77	
Parity[d]	3.20	1.24	2.83	.91		1.45
Proximity	4.10	2.17	3.67	2.20		−.83
Contact	2.17	1.37	2.57	1.61		1.12
Avoidance[d]	2.83	1.95	2.24	1.54		−1.45
Disorganization[d]	2.40	2.06	1.24	.54		−3.09**

Note. $N = 72$. SES = socioeconomic status; WAIS = Wechsler Adult Intelligence Scale.
[a]$n = 30$. [b]$n = 42$. [c]Mothers were 18–25 years old. [d]Higher values denote poorer scores. [e]$n = 29$.
**$p < .01$.

of inability to locate the family and 1 because the child was no longer in the custody of the mother. Four dyads among the comparison group were not used: 1 because of withdrawal of consent, 1 because of inability to locate the family, 1 because of technical difficulties related to observing the mother–child interaction, and 1 because of medical problems. Thus, a total of 30 methadone-exposed children and 42 comparison children participated in the 24-month assessment.

Procedures

The mother and child assessments were conducted at Time 1 (i.e., third trimester), Time 2 (i.e., 12 months), and Time 3 (i.e., 24 months).

Time 1. The measures administered to the women included the Wechsler Adult Intelligence Scale (Wechsler, 1955); the Schedule for Affective Disorders and Schizophrenia-Life Version (SADS-L; Endicott & Spitzer, 1978); the Hollingshead Two-Factor Index of Social Position (Hollingshead & Redlich, 1958), which assessed for SES in the mother's current family and her family of origin; the Neonatal Perception Inventory (NPI; Broussard & Hartner, 1970, 1971), modified to be administered during the third trimester; an extensive intake interview, which included a modified version of the University of Washington Pregnancy and Health Questionnaire (University of Washington Pregnancy and Health Study, 1974); and prenatal urine drug and alcohol toxicology screenings.

Time 2. Because at 12 months the infants were administered a long protocol that might have tested the limits of their endurance, a one-separation, one-reunion attachment procedure based on the Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978) was used. A 12-min, four-episode separation–reunion procedure was conducted in an office furnished as a living room.

Time 3. At 24 months, mothers and children participated in an assessment of mother–child interaction (Bernstein & Hans, 1994). Participants were videotaped for approximately 40 min communicating in eight scripted situations: "Teach your child to use the shape sorter," "play a game you both enjoy at home," "let your child play with toys," "help your child play with toys you both enjoy," "help your child go to potty," "cleanup time," "free time," and "snack time."

Measures at Time 1

Hollingshead Two-Factor Index of Social Position. This index revealed that both groups of women represented the lowest socioeconomic strata: from skilled manual working poor to those receiving public assistance.

The NPI. This inventory is used to assess the mother's perceptions of her 1-month-old infant. For this study, the mother completed this instrument during her third trimester of pregnancy rather than at 1 month; thus, the instructions were reworded to reflect their expectation of bother rather than currently perceived bother. The mother was asked to rate her perceptions of her future infant's degree of bother on each of six items: crying, spitting, feeding, elimination, sleeping, and predictability. Each of these items was rated on a scale of 4 (*a great deal*) to 1 (*none*), with scores thus ranging from 6 to 24. Lower scores denote more desirable perceptions. Used as an instrument of risk, the NPI was shown to be associated with the need for therapeutic intervention at 4½ years of age, $\chi^2(1) = 16.43$, $p < .001$ (Broussard & Hartner, 1971). In a sample of methadone-maintained mothers and a matched comparison group, a mother's expectation of bother as measured by the NPI also was positively correlated with her infant's contact-maintaining attachment behavior and negatively correlated with avoidant attachment behavior (Goodman et al., 1999).

Measure at Time 2

Separation–reunion procedure. Ainsworth (Ainsworth, 1979; Ainsworth & Wittig, 1969) operationalized Bowlby's (1982) attachment theory by developing the Strange Situation, an observational procedure designed to assess the quality of the infant's organization of attachment to the primary caregiver (Ainsworth & Wittig, 1969). In the Strange Situation, the infant navigates her or his way through a series of eight laboratory-based episodes that include separation from the mother, presence of a stranger, and reunion with the mother. Based on the infant's organization of attachment behaviors in response to these anxiety-provoking episodes, Ainsworth (Ainsworth, 1979; Ainsworth & Wittig, 1969) classified a "normal" sample of infants into three categories: anxious/avoidant (A), secure (B), and anxious/resistant (C). Secure (B) infants cry when separated from the mother, vigorously seek proximity and physical contact with the mother upon reunion, and quickly return to exploration. Anxious-Avoidant (A) infants rarely cry when separated from the mother and avoid the mother upon reunion. Anxious-Resistant (C) infants, on the other hand, display intense distress when separated and act angry and inconsolable toward the mother upon reunion, seeking physical contact yet resisting when the mother offers it. A fourth attachment classification potentially useful to the study of psychopathology and first reported by Main and Solomon (1986) was used to describe infants who

appeared to lack both organization and coherence in their responses to separation and reunion distress. Main and Solomon (1986) thus called these infants "disorganized/disoriented" (D), and placed them in their own, admittedly amorphous "category."

A one-separation, one-reunion attachment procedure was used; therefore, only the attachment rating scales (rather than attachment classifications) will be reported on. Because of the lower level of separation anxiety elicited by a one-separation, one-reunion sequence, the ratings made in this study would not be identical to those made in the standard Strange Situation. In particular, we suspect that the single separation–reunion procedure, which appears to reduce infants' overall level of distress, might overestimate the numbers of securely attached infants. Thus, following the work of others (e.g., Goodman et al., 1999; Lyons-Ruth, Connell, & Zoll, 1989), data analysis focused on the ratings of four attachment behaviors (i.e., proximity-seeking, contact-maintenance, avoidance, and disorganization) rather than on formal attachment classification.

The episodes used in this study correspond to Episodes 5 to 8 of the Strange Situation: infant with the mother, separation from the mother, presence of a stranger, and reunion with the mother (Ainsworth et al., 1978, pp. 324–325). These episodes are arranged so that the infant experiences increasingly mildly stressful situations. If distress on separation lasted 30 s, separation episodes were discontinued. These episodes yielded four 7-point attachment rating scales (proximity-seeking, contact-maintenance, resistance, avoidance; Ainsworth et al., 1978). In addition to these four attachment rating scales, 80 of 81 infants at the 12-month assessment also received 9-point ratings on attachment disorganization/disorientation (D). D ratings were undertaken because previous research (Goodman et al., 1999; O'Connor et al., 1992; Rodning et al., 1991; Swanson, Beckwith, & Howard, 2000) has implicated attachment disorganization as an outcome of some kinds of drug exposure.

Two raters who had completed an attachment-rating workshop at the University of Minnesota rated videotapes. Both raters were blind to methadone group and all other information about families. Interrater reliabilities for the four attachment rating scales using Pearson correlation coefficients were: proximity-seeking .82, contact-maintenance .83, resistance .37, and avoidance .68. Because of low interrater reliability, resistance was excluded from subsequent analysis. The ratings of one of the raters were used in this data analysis.

The same two raters, who also had received training at a second workshop from Mary Main, used Main and Solomon's (1990) criteria to rate the infants on a 9-point rating scale of attachment disorganization/disorientation (pp. 152–153). One comparison infant was excluded from D-rating analyses because he was diagnosed with cerebral palsy. Interrater reliability for the D rating scale using a Pearson correlation coefficient was .89. The ratings of one of the raters were used in this data analysis. The videotapes of the 4 infants with the highest D ratings also were viewed by an expert on D attachment, who confirmed the accuracy of the D ratings.

Measure at Time 3

Parent–Child Observation Guides for Program Planning (PCOGs). The PCOGs (Bernstein & Hans, 1994) were used to assess mother–child interaction by observing aspects of mutual competence (Goldberg, 1977). Four mother categories of interaction were assessed: dealing with self-assertion, responding to the child's activity and interests (sensitivity/pacing), positive feelings shown to the child, and helping the child learn language. Five child categories of interaction were assessed: expression of self, using the mother's help, involvement with the mother, positive feelings shown to the mother, and language with the mother. PCOG scores were summed across categories and that sum standardized to produce a global mother-communication score and a global child-communication score. Two PCOG raters blind to metha-

done exposure and attachment ratings coded the videotapes. Disagreements were resolved by consensus. Consensus scores were used for analyses. Interrater reliability was .79 for mother communication and .60 for child communication. Alpha coefficients were .78 for mother communication and .58 for child communication. In a sample of methadone-maintained mothers, mother communication assessed at 24 months using the PCOGs was positively correlated with both the Social Resiliency subscale of the Bayley Scales of Infant Development Infant Behavior Record (Bayley, 1969; Matheny, 1980, 1983) assessed at 24 months and child communication assessed at 24 months using the PCOGs (Bernstein & Hans, 1994). These child-communication scores also were positively correlated with the Social Resiliency subscale scores. A cumulative index that consisted of five maternal socioenvironmental risk factors also was positively correlated with child communication. Additional information on construct validity, internal consistency, stability, and reliability is reported elsewhere (Bernstein & Hans, 1994; Bernstein et al., 1991).

Data Analysis

We conducted the analyses in three stages. First, we identified the significant zero-order correlations between mother communication and child communication at 24 months (the outcome variables) and the mother and child demographic and risk variables assessed in this study (see Table 2). We also conducted these zero-order correlations within the methadone-exposed and comparison groups separately to identify potential moderators of the relation between prenatal

TABLE 2. *Zero-Order Correlations Between Mother Communication and Child Communication (Outcomes) and Mother and Child Demographic and Risk Variables*

	Mother Communication (r)			*Child Communication* (r)		
Variable	*Total*	*M*[a]	*C*[b]	*Total*	*M*[a]	*C*[b]
Mother communication	—	—	—	.09	−.01	.21
Child communication			—	—	—	
Mother variables						
Methadone exposure[c]	−.28*	—	—	.06	—	—
Education	.08	.12	.00	.02	−.06	.11
Hollingshead SES[d]	−.08	.15	−.18	.00	.12	−.10
Hollingshead SES mother's family of origin[d]	−.03	−.04	.01	−.03	. 13	−.21
Married	.08	.01	.08	.11	.11	.13
WAIS IQ	.23[†]	.10	.29[†]	.10	.00	.16
Expectation of bother[d]	.02[e]	−.09[f]	.39*[g]	.13[e]	.02[f]	.20[g]
Child variables						
Birth weight	.06[h]	.05[i]	−.13	−.11[h]	−.03[i]	−.19
Gender	.00	.09	−.01	.04	.06	.01
Parity[d]	.02	.24	−.09	.01	.01	−.03
Proximity	.12	.08	.21	−.04	−.33[†]	.19
Contact	.15	.21	.07	.09	.04	.14
Avoidance[d]	−.35**	−.22	−.40**	−.06	.00	−.14
Disorganization[d]	−.30*[h]	−.15	−.30[†j]	−.26*[h]	−.42*	−.16[j]

Note. $N = 72$. Total = Total sample; M = Methadone group; C = Comparison group.
[a]$n = 30$. [b]$n = 42$. [c]Higher value denotes methadone exposure. [d]Higher values denote poorer scores. [e]$n = 59$. [f]$n = 23$. [g]$n = 36$. [h]$n = 71$. [i]$n = 29$. [j]$n = 41$.
[†]$p < .10$. *$p < .05$. **$p < .01$.

TABLE 3. *Analysis of Covariance (ANCOVA) With Mother Communication and Child Communication as the Dependent Variables, Methadone Exposure as the Independent Variable, and Selected Mother and Child Demographic and Risk Variables as the Covariates*

Variables	*Mother Communication*[a] (F)	*Child Communication* (F)
Overall analysis	3.69**	3.55*
Mother characteristics		
Methadone exposure	2.48	1.91
Expectation of bother	.20	
Methadone exposure × expectation of bother	5.11*	
Child characteristics		
Avoidance	5.77*	
Disorganization	1.00	6.84*
Methadone exposure × avoidance	.49	

Note. $N = 71$.
[a]$n = 58$.
*$p < .05$. **$p < .01$.

methadone exposure and mother communication and child communication (see Table 2). Second, we conducted two one-way ANCOVAs with mother communication and child communication as the dependent variables to determine whether methadone exposure (i.e., the independent variable) and the mother and child risk variables identified as significantly correlated from the previous stage (i.e., the covariates) were still significantly associated with these two outcomes (see Table 3). Third, we used the results from the previous stage to test for a potential mediational model using a hierarchical multiple-regression analysis (see Baron & Kenny, 1986) to account for the variance in the quality of mother communication and child communication (see Table 4).

RESULTS

Zero-Order Correlations Between Mother Communication and Child Communication (Outcomes) and Mother and Child Demographic and Risk Variables

Table 2 presents the zero-order correlations between mother communication and child communication at 24 months (i.e., the outcome variables) and the mother and child demographic and risk variables assessed in this study. These results were used to identify potential mediators of mother communication and child communication in subsequent stages. Mother communication was significantly associated with methadone exposure, $r = -.28$, $p < .05$, avoidant attachment behavior, $r = -.35$, $p < .01$, and disorganized attachment behavior, $r = -.30$, $p < .05$. Mothers who demonstrated a lower quality of communication at 24 months tended to be methadone-maintained and have children who demonstrated more disorganized and especially avoidant attachment behavior at 12 months.

We also conducted these zero-order correlations within the methadone and comparison groups separately to identify potential moderators of the relation between prenatal methadone exposure and mother communication (see Table 2). Two correlations were significant for the comparison group, but not the methadone group: Mother communication was significantly correlated with expectation of bother, $r = .39$, $p < .05$, and avoidance, $r = -.40$, $p < .01$, in

TABLE 4. *Prediction of Mother Communication Using Hierarchical Multiple-Regression Analysis*

Variables	*Mother Communication*	
	Step 1	*Step 2*
Multiple R^2	.13	.22
F change	4.06*	6.38*
Predictors		
Methadone exposure[a]	−.48*	−.11
Methadone exposure × expectation of bother[b]	.16	−.18
Mediator		
Avoidance[b]		−.37*

Note. $N = 59$.
[a]Higher value denotes methadone exposure. [b]Higher values denote poorer scores.
*$p < .05$.

the comparison group, but not the methadone group. The Methadone Exposure × Expectation of Bother and Methadone Exposure × Avoidance interactions were included to test for potential moderators of the relation between prenatal methadone exposure and mother communication. Comparison mothers who demonstrated a lower quality of communication at 24 months tended to expect less bother during pregnancy and have children who demonstrated more avoidant attachment behavior at 12 months.

Child communication was significantly correlated with disorganized attachment behavior, $r = -.26$, $p < .05$. Children who demonstrated a lower quality of communication at 24 months tended to demonstrate more disorganized attachment behavior at 12 months (see Table 2).

We also conducted these zero-order correlations within the methadone and comparison groups separately to identify potential moderators of the relation between prenatal methadone exposure and child communication (see Table 2). One correlation was significant for the methadone group, but not the comparison group: Child communication was significantly correlated with disorganized attachment behavior, $r = -.42$, $p < .05$, in the methadone group, but not the comparison group. The Methadone Exposure × Disorganization interaction was included to test for a potential moderator of the relation between prenatal methadone exposure and child communication. Methadone-exposed children who demonstrated a lower quality of communication at 24 months tended to demonstrate more disorganized attachment behavior at 12 months.

Analysis of Covariance (ANCOVA)

Table 3 presents the one-way ANCOVA, with mother communication as the dependent variable, methadone exposure as the independent variable, and expectation of bother, avoidance, disorganization, and the Methadone Exposure × Expectation of Bother and Methadone Exposure × Avoidance interactions as the covariates identified from the previous stage (see Table 2). The overall analysis was significant, $F(6, 51) = 3.69$, $p < .01$, with significant effects for avoidance, $F(1, 51) = 5.77$, $p < .05$, and the Methadone Exposure × Expectation of Bother interaction, $F(1, 51) = 5.11$, $p < .05$ (see Figure 1). Methadone exposure was not associated with mother communication. Mothers who demonstrated a lower quality of communication at 24 months tended to have children who demonstrated more avoidant attachment behavior at 12 months. In addition, comparison mothers who demonstrated a lower quality of communi-

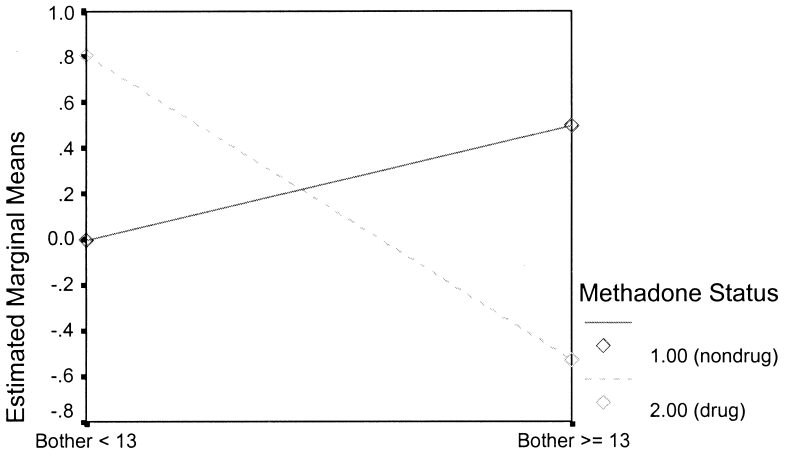

FIGURE 1. Interaction effect between methadone exposure and expectation of bother on mother communication at 24 months.

cation at 24 months tended to expect less bother during pregnancy while methadone-maintained mothers who demonstrated a lower quality tended to expect more bother.

Table 3 also presents the one-way ANCOVA, with child communication as the dependent variable, methadone exposure as the independent variable, and disorganization as the covariate. The overall analysis was significant, $F(2, 68) = 3.55$, $p < .05$, with a significant effect for disorganization, $F(1, 68) = 6.84$, $p < .05$. Methadone exposure was not associated with child communication. In a separate analysis, the Methadone Exposure × Disorganization interaction was tested and found not to have a significant effect. Children who demonstrated a lower quality of communication at 24 months tended to demonstrate more disorganized attachment behavior at 12 months.

Prediction of Mother Communication Using Hierarchical Multiple-Regression Analysis

Because methadone exposure was significantly associated with mother communication in Table 2, but became nonsignificant in the presence of the covariates in Table 3, we suspected that one of the covariates from the previous stage—avoidance—mediates the relation between methadone exposure and the Methadone Exposure × Expectation of Bother interaction (the other significant covariate from the previous stage), and mother communication. A one-way ANCOVA revealed that methadone exposure and this interaction were associated with avoidance, overall model, $F(2, 56) = 13.00$, $p < .001$, with significant effects for methadone exposure, $F(1, 56) = 25.45$, $p < .001$, and the interaction, $F(1, 56) = 21.25$, $p < .001$. A hierarchical multiple-regression analysis was therefore conducted to test whether avoidance mediates the relation between methadone exposure and the quality of mother communication (see Table 4). In Step 1, methadone exposure and the Methadone Exposure × Expectation of Bother interaction were entered; in Step 2, the potential mediating variable, avoidance, was entered (for details, see Baron & Kenny, 1986).

With mother communication as the dependent variable, Step 1 was significant, $F(2, 56) = 4.06$, $p < .05$, multiple $R^2 = .13$, with a significant effect for methadone exposure, $t(57) = -2.12$, $p < .05$, $\beta = -.48$. The F change for Step 2 was significant, $F(1, 55) = 6.38$, $p < .05$, multiple $R^2 = .22$, with a significant effect for avoidance, $t(57) = -2.53$, $p < .05$, $\beta =$

−.37. Methadone exposure became nonsignificant in Step 2. Thus, avoidant attachment behavior at 12 months was found to mediate the relation between methadone exposure and the quality of mother communication at 24 months.

DISCUSSION

This study investigated the effects of methadone exposure, mother's expectation during pregnancy of bother, and infant's attachment behaviors at 12 months on the quality of mother communication and child communication at 24 months. First, we found an interaction effect on the quality of mother communication at 24 months between methadone exposure and a mother's expectation of her future infant's degree of bother. Specifically, methadone-maintained mothers who during pregnancy expected higher degrees of bother from their future infants tended to communicate more poorly with their children at 24 months while comparison mothers who during pregnancy expected higher degrees of bother tended to communicate better. Several research groups (Goodman et al., 1999; Lyons-Ruth et al., 1997; Spieker & Booth, 1988) suggested that mothers who deny any potential bother in their future infants could be denying their own angry feelings, which are then expressed through angry, rejecting parenting behaviors. Extending this idea, Stevenson-Hinde and Shouldice (1995, p. 593) suggested that mothers' perceptions of their children might have more to do with their own attachment-influenced patterns of responsiveness than their children's actual behavior. Because the mother's attachment history was not assessed in this study, the hypothesis that the quality of her internal working model influenced her perceptions of her future infant could not be tested.

It would make psychological sense, however, if mothers who were able to acknowledge and express their angry feelings during their own childhoods would be more likely to acknowledge and accept these feelings in their future infants, and would therefore be less likely to allow their infants' expressions of anger to interfere with the quality of their communication with their children at 24 months. Thus, a greater capacity to acknowledge that infants can be bothersome would be associated with a greater capacity to communicate. This association was found to hold only for the comparison mothers.

For the methadone-maintained mothers, higher expectation of bother was associated with poorer communication at 24 months. Perhaps these mothers have few internal controls for affect regulation; thus, higher expectation of bother indicates greater difficulty with tolerating and modulating affect. Whereas the comparison mothers—who might have less difficulty with affect regulation—communicate better when they acknowledge negative affect, methadone-maintained mothers—who might become overwhelmed at times with negative affect—communicate more poorly when they acknowledge negative affect. Paradoxically, then, denying their future infants' angry feelings might actually make them better able to communicate effectively with their children at 24 months.

The differences in both personality and attachment representation between these two groups of mothers need to be explored more thoroughly to clarify the meaning of this intriguing finding. Three groups of researchers have designed semistructured interviews to assess the quality of parents' internal working models of their children (for reviews of this literature, see George & Solomon, 1999; Goodman, 2002). Studies that have implemented these interviews have found associations between these internal working models and their children's attachment patterns and socioemotional and behavioral outcomes. Although not theoretically designed to assess parents' internal working models of their children, the NPI nevertheless assesses parental perceptions of their children and could function as a less time-consuming, less labor-intensive alternative to these interviews. It would be important to replicate the finding from the present study using one of these theoretically designed interviews.

Second, methadone exposure was found to be associated with the quality of mother communication at 24 months, but this association became nonsignificant when infant's avoidant attachment behavior at 12 months was entered into the hierarchical multiple-regression equation. Avoidant attachment behavior was shown to mediate the relation between methadone exposure and the quality of mother communication at 24 months. A transactional model of development (Sameroff, 1975; Sameroff & Chandler, 1975) was supported because a maternal characteristic during pregnancy (i.e., methadone maintenance) was associated with her infant's behavior at 12 months (i.e., avoidance), which in turn was associated with his or her *mother's* quality of communication at 24 months.

Previous attachment studies have tested only unidirectional models of development. For example, Lyons-Ruth (1996) reported that a mother's hostile-intrusive behaviors directed toward the infant during the first 12 months significantly influence the development of disorganized attachment behavior by 12 months, which in turn predicts aggressive behavior in the *child* by school age. Our study demonstrated in this high-risk sample that maternal and infant risks reciprocally influence each other to produce favorable or adverse outcomes for both members of the dyad. The mediational model supported by our study suggests that perhaps because of her addiction, a methadone-maintained mother is less attentive to her infant's attachment cues, which produces avoidance in her infant, who in turn feels rejected by her and needs to protect himself or herself from these feelings. In turn, the mother begins to feel rejected by her infant's avoidance of her, which likely reinforces her communication difficulties, as both partners seek to establish a "goal-corrected partnership" (Bowlby, 1982). We speculate that this adverse impact on the quality of the mother's communication at 24 months might reinforce the toddler's already developing internal working model of a mother insensitive to his or her needs.

Third, disorganized attachment behavior at 12 months, but not methadone exposure, was associated with the quality of child communication at 24 months. We know from previous research (Goodman et al., 1999) that methadone exposure, even after controlling for many exogenous mother and infant variables, strongly predicts disorganized attachment behavior. One explanation for this earlier finding is that the teratological effects of methadone exposure leave infants with fewer strategies for organizing their attachment experiences during periods of separation-induced anxiety. It seems reasonable to suggest that disorganized attachment behavior also would adversely affect the quality of child communication at 24 months because communication requires an organization of affect regulation, which infants who manifest disorganized attachment behavior lack (see Solomon & George, 1999); however, disorganized attachment behavior does not mediate the relation between methadone exposure and child communication because these two variables were not associated with each other (see Table 2). Hostile-intrusive (Lyons-Ruth, 1996; Swanson et al., 2000) or frightening or frightened (Hesse & Main, 1999; Lyons-Ruth et al., 1999; Main & Hesse, 1990; Schuengel et al., 1999) maternal behavior, not assessed in this study but previously shown to be related to disorganized attachment behavior, could instead account for the variance in disorganized attachment behavior. Whatever the source of disorganized attachment behavior, we are able to conclude that disorganized attachment behavior places children at risk for communicating more poorly with their mothers by 24 months.

This transactional model of development suggests that both members of the dyad require early intervention to break this cycle of reciprocal influence. If only one member of the dyad is identified for intervention, the negative effects of the other member could reintroduce the reciprocally reinforcing negative-relationship patterns, which influence the pattern of affect regulation and, ultimately, the formation of the child's internal working model of the relationship to the mother as well as the mother's internal working model of the relationship to the

child (Magai, 1999). As development proceeds, the child's internal working model becomes increasingly resistant to change (Bowlby, 1980) and influences the development of behavior problems in the child by school age (Lyons-Ruth, 1996). Early intervention services with both members of the dyad will be necessary to improve dyadic communication and stop these transactional cycles of rejection and unresponsiveness from recurring. Early interventionists (Lieberman, Weston, & Pawl, 1991; Lieberman & Zeanah, 1999) have worked with high-risk mothers on (a) uncovering and articulating painful affects that originate from early experiences in their own childhood relationships and that produce defensive patterns of affect regulation, then (b) connecting these painful affects and the experiences associated with them to current affective experiences with their infants. Such efforts provide mothers with opportunities to work through long-standing obstacles to secure parenting and provide infants with alternative models upon which to acquire a secure base for exploration and further development. The results from the present study could focus early intervention on the specific deficits of drug-dependent mothers, which include a vulnerability to defensive patterns of affect regulation that both impact and are impacted by her child's avoidant attachment behavior toward her.

Certain limitations of this study weaken the conclusions that can be drawn from it. First, the single separation–reunion attachment procedure is a less reliable context for assessing attachment behaviors than the standard two-separation, two-reunion Ainsworth Strange Situation. Second, interrater reliability for the quality of child communication was relatively low, which could have accounted for the relative lack of significant findings using this variable. Third, small cell sizes, particularly among the methadone-exposed infants, could have contributed to false-negative findings. Using a larger sample size could strengthen the significant findings and raise still others across the threshold of significance. Fourth, the plausibility of the transactional model depends on testing moderators and mediators. Although we examined a wide range of distal and proximal variables, a potentially moderating or mediating variable might have been overlooked. For example, relationships with nonmaternal caregivers, maternal child-rearing behaviors, infant maltreatment (previously associated with D attachment; see Beeghly & Cicchetti, 1994; Carlson, Cicchetti, Barnett, & Braunwald, 1989a, 1989b), and concurrent stressful life events known to contribute to the organization of children's behavior (Belsky & Isabella, 1988; Lewis, 1990) were not assessed in this study but could nevertheless function as potential moderators or mediators of the relation between methadone exposure and the quality of mother communication and child communication at 24 months. Future studies that correct for these limitations could uncover additional direct and indirect associations not detected by this study.

The findings from this study support the use of a transactional model of development: (a) Methadone-maintained mothers who minimize expectation of their future infants' degree of bother and comparison mothers who instead acknowledge expectation of this degree of bother both demonstrate better communication with their toddlers, (b) prenatal methadone exposure impacts on the quality of mother communication through her infant's avoidant attachment behavior, and (c) disorganized attachment behavior directly impacts on the quality of child communication regardless of methadone exposure. We concluded that the extent to which a mother's expectation of her future infant's degree of bother is positively associated with the quality of her communication at 24 months depends on her methadone status: Methadone-maintained mothers who demonstrate good communication minimize their expectation of bother while comparison mothers who demonstrate good communication acknowledge it. We suggested that these two different findings in these groups of mothers reflect two different patterns of affect regulation. Methadone-maintained mothers feel more in control of their affects, and therefore can respond more sensitively to their future infants, when they are able to minimize these infants' expected irritable affects. Comparison mothers, on the other hand, feel

more comfortable acknowledging their own irritable affects and therefore are able to acknowledge their infants' expected irritable affects, which allows them to respond sensitively to their future infants in a greater variety of situations.

We also concluded that prenatal methadone exposure negatively impacts on the quality of mother communication by 24 months, but this impact acts through the infant's avoidant attachment behavior. Perhaps methadone-maintained mothers are less attentive to their infants' attachment cues, which in turn create expectations of maternal unavailability in these infants and corresponding avoidant attachment behavior during attachment-relevant situations (see Ainsworth et al., 1978). The infants' avoidance in turn impacts on these mothers' affect state, which reinforces the poor quality of mother communication in interaction with these toddlers by 24 months.

Finally, we concluded that disorganized attachment behavior at 12 months predicts poor child communication at 24 months regardless of methadone exposure. We suggested that this behavior reflects affect dysregulation, which in turn produces poorer child communication (see also Beeghly & Cicchetti, 1994). Sophisticated lexical expression first requires an organization of affect regulation. In the case of disorganized infants, therefore, incoherent and dysfluent speech patterns are often observed in later developmental phases (Main, 1995; Main & Cassidy, 1988; Main, Kaplan, & Cassidy, 1985).

Early intervention services need to target the patterns of affect regulation in both mother and child to prevent these transactional cycles from continuing to develop into an antagonistic relationship between mother and child and behavior problems for the child by school age (Lyons-Ruth, 1996). Efforts to help mothers identify, express, and resolve painful feelings related to adverse experiences in their own childhood relationships and interpret these early experiences as influential aspects of current feelings, perceptions, and attitudes toward their infants show promise in organizing the regulation of affect within the dyad (Lieberman et al., 1991; Lieberman & Zeanah, 1999). Therapists need to focus specifically on these mothers' defensive patterns of affect regulation and the ways in which these patterns both impact and are impacted by avoidant attachment behavior. Treatment of the dyad at this early stage using this approach could be more effective for restoring a healthy developmental progression than treatment of either member of the dyad in isolation.

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