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Patterns of mother–infant interaction from 3 to 12 months among dyads with substance abuse and psychiatric problems

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ABSTRACT

The aim of this study was to investigate the development of mother–infant interaction patterns from 3 to 12 months among three groups of mother–baby pairs recruited during pregnancy: one group from residential substance abuse treatment ($n = 28$), a second group from psychiatric outpatient treatment ($n = 22$), and a third group from well-baby clinics ($n = 30$). The mother–infant interaction at 3 and 12 months was assessed by the Parent–Child Early Relational Assessment (PCERA), which consists of maternal, child and dyadic subscales (Clark, 2006). Linear mixed effects models were used to analyze group differences and the changes in mother–infant interaction from 3 to 12 months.

At 3 months, pairwise comparisons showed that the group with psychiatric problems had significantly more difficulties in the mother–infant interaction than the two other groups. The group with substance abuse problems was not significantly different from the two other groups. At 12 months, the mother–infant pairs in the substance abuse group showed significantly more relational disturbances than the non-clinical pairs, as well as a poorer affective quality of interaction than the dyads in the group with psychiatric problems. Analysis of change from 3 to 12 months showed that difficulties in the interaction increased among the mother–baby pairs in the substance abuse group, while improvements were displayed in the two other groups. These results underline that mother–infant pairs at double risk due to maternal substance abuse and other non-optimal factors, are in need for long-term follow up in order to prevent the development of negative interactional patterns.

1. Introduction

The quality of the interaction between the infant and its primary caregiver during the first year is pivotal for child social and emotional development. The back-and-forth process-taking place during caregiver–infant interaction is one of the most essential experiences in shaping the neural connections and architecture of the brain as well as child social and emotional development (National Scientific Council on the Developing Child – Center on the Developing Child at Harvard University,

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2009; Schore, 2005; Siegel, 2012). Further, animal models have demonstrated that gene expression in brain areas related to social and emotional functioning may be influenced by the quality of the caregiver–infant interaction (National Scientific Council on the Developing Child – Center on the Developing Child at Harvard University, 2009).

According to the transactional model (Sameroff, 2009; Sameroff & Chandler, 1975), child development is based on ongoing bidirectional dynamic transactions between the child and its rearing environment over time. These dynamic exchanges lead to alterations in both infant social and emotional behavior as well as caregiver contingency and responsiveness and the quality of the caregiver–infant interaction. Developmental outcomes comprises a complex interplay between infant biological constitution and caregiving contexts, such as the family's socioeconomic conditions, that in turn influence the caregivers emotional availability toward the child (Bronfenbrenner & Morris, 2006).

Maternal substance abuse problems may pose a threat to the quality of the mother–infant relationship. Mothers with such problems has for instance been reported to be less sensitive and emotionally involved, and to have a reduced ability to attune to the infant's emotional state during mother–infant interaction compared to mothers without such problems (Burns, Chethik, Burns, & Clark, 1997; Pajulo et al., 2001; Siqveland & Moe, 2013; Siqveland, Smith, & Moe, 2012). Substance abuse problems are often beset with several other adverse factors that may impair the postnatal rearing conditions of the child such as maternal psychological difficulties and socio-economic disadvantages (Hans, Bernstein, & Henson, 1999; Jansson & Velez, 2011; Lester, Boukydis, & Twomey, 2000). The co-existence between maternal drug dependency and high levels of psychiatric problems such as anxiety and depression, as well as other serious psychiatric conditions is especially well documented (Espinosa, Beckwith, Howard, Tyler, & Swanson, 2001; Hans et al., 1999; Luthar, Cushing, Merikangas, & Rounsaville, 1998; Savonlahti, 2005; Weissman et al., 1999). Mothers with psychiatric problems and in particular depression have been found to display poor reciprocity and synchronicity during interactions with their infants as well as an impaired ability to appropriately recognize an infant's emotional state, e.g. (Field, 1984, 1995). These mothers also tend to be either disengaged or intrusive during the mother–infant interaction (Field, 1995; Luthar et al., 1998; Weinberg & Tronick, 1998).

A co-occurrence between maternal substance abuse problems and a high likelihood for having experienced childhood traumas and difficulties in close relationships, as well as exposure to violence during the mother's own childhood and adolescence have also been reported (Amaro, Zuckerman, & Cabral, 1989; Jansson & Velez, 2011). Such difficult relational experiences might result in distorted mental representations of parenting and infant capabilities, which in turn lead to a reduced ability to display sensitive maternal behavior in mother–infant interaction, as well as trouble in interpreting and responding contingently to infant signals (Luthar & Walsh, 1995; Pajulo et al., 2012). Several socioeconomic disadvantages are also commonly associated with maternal substance abuse such as single parenthood, poverty, low education and scant social support (Beeghly & Tronick, 1994; Hans & Jeremy, 2001; Kettinger, Nair, & Schuler, 2000; Nair, Schuler, Black, Kettinger, & Harrington, 2003). Adverse factors that confound with maternal substance abuse problems may alone or collectively interfere both with the mothers' ability to be sensitive caregivers and the infants' postnatal caregiving environment.

At the same time infants born to mothers with substance abuse problems are often vulnerable due to exposure to drugs, smoking, and stress as well as other adversities during pregnancy (Beeghly & Tronick, 1994; Jansson & Velez, 2011; Moe & Slinning, 2001). This may result in a compromised birth status, as well as regulation difficulties and increased emotional reactivity in the newborn infants (Hans & Jeremy, 2001; Lester & Tronick, 1994). Infants with such constitutional vulnerability especially need a sensitive caregiver and pose extra challenges to the parenting capacity (Pajulo et al., 2012; Schuetze, Eiden, & Coles, 2007). The adversities facing both the mother with substance abuse problems and her infant might impact negatively on the mother–infant interaction (Beeghly & Tronick, 1994; Pajulo et al., 2012), and lack of reciprocal enjoyment and enthusiasm in the mother–infant interaction has for instance been found among such dyads (Burns, Chethik, Burns, & Clark, 1991). Hence, contributions both from the mother and the infant need to be assessed as part of the dyadic unit (Boom, 1997).

The purpose of the present study was to investigate the long-term development of the mother–infant interaction during the first year among mothers with substance abuse and with psychiatric problems and their infants. More knowledge about the long-term development of mother–infant patterns is important for tailoring adequate treatment for these vulnerable mother–baby pairs over time. Since maternal substance abuse and psychiatric problems often are confounded in substance abuse research, we aimed to examine the impact of these maternal problems on the mother–infant interaction separately. Therefore, one group of mothers, who was admitted to substance abuse treatment and their infants, a second group of mothers who was referred to a psychiatric outpatient center and their infants, as well as a third non-clinical group of mothers with neither substance nor psychiatric problems and their infants, was enrolled during pregnancy. Maternal, infant and dyadic behavior during mother–infant interaction from 3 to 12 months was examined.

As shown above maternal substance abuse often co-exist with psychiatric problems and socio-economic disadvantages (Hans et al., 1999; Jansson & Velez, 2011; Lester et al., 2000), we therefore hypothesized that the mother–infant interaction at 3 months would be more disturbed in the group with substance abuse problems than in the group with mainly psychiatric problems. We further hypothesized that the mother–infant interaction at 3 months would be more disturbed in both of the two clinical groups than in the non-clinical comparison group. However, since both clinical groups had been admitted to treatment, we hypothesized that the mother–infant interaction from 3 to 12 months would develop in a positive direction.