Infant Behavior & Development 35 (2012) 60–70

Contents lists available at SciVerse ScienceDirect

Infant Behavior and Development

The impact of optimality on maternal sensitivity in mothers with substance abuse and psychiatric problems and their infants at 3 months

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ARTICLE INFO

Article history:
Received 20 October 2010
Received in revised form 9 March 2011
Accepted 28 September 2011

Keywords:
Maternal sensitivity
Substance abuse
Psychiatric problems
Optimality indexes
Relational experiences
Infants' perinatal status

ABSTRACT

The main aim of this study was to investigate the predictive validity of four different optimality indexes, as well as infant perinatal status, in relation to maternal sensitivity in interaction at 3 months. The four optimality indexes comprised items related to substance abuse, psychiatric condition, relational experience and socioeconomic status (SES). Maternal sensitivity in mother–infant interaction was assessed in two different groups of mothers. One group consisted of mothers with substance abuse and psychiatric problems who underwent treatment during pregnancy. The other group of mothers had neither substance abuse nor psychiatric problems. The expectant mothers were interviewed in the third trimester of pregnancy. Medical records and meconium were obtained from the infants at birth. Three months after birth, maternal sensitivity in mother–infant interaction was assessed. Altogether 79 mother–infant dyads participated in the study. The mothers' optimality associated with relational experiences, as well as the infants' perinatal status were found to predict maternal sensitivity in mother–infant interaction at 3 months. The SES index was also significantly related to maternal sensitivity. The relation between group and maternal sensitivity was mediated by the mothers' optimality associated with relational experiences. This study points to the importance of addressing the mothers' own relational experiences and their current representations of motherhood during treatment, in order to support and enhance maternal sensitivity.

1. Introduction

Maternal sensitivity is an essential component of mother–child interaction, and refers to the mother's awareness of the infant, and her ability to respond contingently to the baby's signals, to read the infant's cues and to structure the environment in accordance with the infant's needs (Ainsworth, Blehar, Waters, & Wall, 1978). The concept of maternal sensitivity was inspired by John Bowlby's attachment theory (1969), and further developed by Mary Ainsworth as a result of her studies of mother–child interaction (Ainsworth et al., 1978).

Maternal sensitivity is assumed to promote secure attachment between the infant and the parent (Biringen et al., 2005), while lack of sensitivity is found to be associated with later insecure attachment in the child (Espinosa, Beckwith, Howard, Tyler, & Swanson, 2001). Several studies report reduced maternal sensitivity and less affective involvement in mothers with substance abuse and psychiatric problems (Eiden et al., 2009; Luthar, D'Avanzo, & Hithes, 2003; Pajulo et al., 2001). These mothers have also been found to have problems affectively connecting with their infants and difficulties in attuning

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doi:10.1016/j.infbeh.2011.09.004

their own emotional responses to their babies (Hans, Bernstein, & Henson, 1999). A reduced capacity to read the infant's intentions (Hans et al., 1999), as well as little enthusiasm, enjoyment and pleasure in interaction with their infants has also been reported (Burns, Chetik, Burns, & Clark, 1991, 1997).

The ability to respond appropriately to the infant's signals is associated with the mother's own relational history (Pajulo, Suchman, Kalland, & Mayes, 2006; Rodning, Beckwith, & Howard, 1991; Van Ijzendoorn, 1992). Mothers who experienced less sensitive caregivers in their own childhood may have internalized representations of others as rejecting and unreliable, and may feel less self-reliant and lovable. Unless adverse relational experiences have been resolved, these representations, or internal working models, are assumed to influence the mother's later relationship with her own child and to shape the transactions with the child (Suchman, McMahon, Slade, & Luthar, 2005). In line with this assumption, negative relational experiences in childhood and adolescence have been found to make mothers less sensitive and more susceptible to interpreting their infants' signals as rejection, and to view their infants more negatively (Johnson & Rosen, 1990; Pajulo et al., 2001). Mothers with substance abuse and psychiatric problems are reported to have a greater likelihood of previous difficult life events, exposure to violence (Amaro, Zuckerman, & Cabral, 1989) and more often to have been raised in families with biological relatives who suffer from psychiatric disorders than mothers without these problems (Rousanville et al., 1991).

A high comorbidity between substance abuse and psychiatric problems such as depression, anxiety and personality disorder, has been reported in several studies (e.g. Espinosa et al., 2001; Hans et al., 1999; Luthar, Cushing, Merikangas, & Rousanville, 1998; Weissman et al., 1999). Maternal depression is associated with poor maternal sensitivity and has been found to compromise the interaction between the mother and the infant (Field, 1995; Luthar et al., 1998; Weinberg & Tronick, 1998). Both proximal and distal variables are related to the developmental outcome of children born to mothers with substance abuse and psychiatric problems, and an environment containing few resources and several adverse factors may compromise the child's development (Sameroff, 1998; Sameroff, Seifer, Baldwin, & Baldwin, 1993).

However, mother–infant interaction is dyadic and bidirectional. It involves both the mother's ability to interpret and respond to signals from the baby, and the infant's own capacity to modulate his states and be able to signal and respond to his caregiver (Tronick & Gianino, 1986). Several studies report that prenatal adversity (e.g. substances, stress, bad nutrition, etc.) increases the likelihood of premature birth, low birth weight, birth complications and small head circumference (Hans, 1992; Lester, 1998; Messinger et al., 2004; Moe, 2002; Moe & Slinning, 2001; Shankaran et al., 2004). Reduced growth measures at birth generally indicate increased biomedical vulnerability in these children, and a higher probability for behavioral dysregulation in infancy (Hans & Jeremy, 2001). A lack of sensitive parenting can exaggerate biomedical vulnerability and regulation problems in infants (Lester & Tronick, 1994).

The main aim of this study was to investigate more thoroughly which factors predict the ability to be a sensitive mother among women with different levels of optimality related to substance abuse, psychiatric condition, relational experience and socioeconomic status (SES). Therefore four different optimality indexes were computed based on the mothers' reports of past and present substance use, psychiatric condition, relational experiences in childhood and in the present, and socioeconomic status. The first index concerned *maternal substance abuse*. Substance abuse during pregnancy is associated with poor prenatal and postnatal environmental conditions for the child (e.g. Hans & Jeremy, 2001; Lester, Boukydis, & Twomey, 2000; Moe & Slinning, 2002). The second index was *maternal psychiatric condition,* which has been found to influence mothers' abilities to be sensitive in interaction with their children, as well as their tolerance of stress (e.g. Espinosa et al., 2001; Hans et al., 1999; Luthar et al., 2003). The third index was *relational experiences,* which have also been found to impact later maternal affective involvement with the child, as well as attitudes regarding child rearing practices (e.g. Pajulo et al., 2006; Suchman et al., 2005; Van Ijzendoorn, 1992). The fourth index was related to *socioeconomic status*, which comprises environmental factors that may impact the child's developmental outcome (e.g. Lester et al., 2009).

The optimality concept was introduced by Prechtl (1980). This concept is based on the idea that it is easier to decide whether a condition is optimal rather than pathological. For instance, it is easy to decide that no alcohol consumption during pregnancy is an optimal condition, but it is much harder to determine how much alcohol intake would comprise an unfavorable condition, and thus affect the fetus adversely. Optimality indexes are widely used in obstetrics and perinatal evaluation of infants born with a biological vulnerability (e.g. Optimality Index-US), and several studies demonstrate the usefulness of such indexes (e.g. Murphy & Fullerton, 2001; Perat, 1993; Seng, Mugisha, & Miller, 2008; Wiegers, Keirse, Berghs, & van der Zee, 1996). Optimality indexes consist of several items, and the sum of optimal conditions attached to the child and the environment is assumed to be a better predictor of the child's outcome than an inherent medical condition. Hence, a higher sum of optimal conditions indicates more optimality, while more negative conditions yield a smaller sum of optimal conditions.

The main aim of this study was to investigate the predictive validity of four different optimality indexes (maternal substance abuse, psychiatric condition, relational experiences and SES), as well as infant perinatal status in relation to maternal sensitivity when the babies were 3 months old.

2. Method

2.1. Participants and procedure

To enhance the variability in background factors (especially those related to substance abuse, psychiatric condition, relational experience and SES), expectant mothers were recruited from different institutions for pregnant women: centers