

The Effects of Prematurity on the Social and Emotional Development of School Age Children.

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Declaration

“I declare that this report does not incorporate without acknowledgment any material previously submitted for a degree in any University, College of Advanced Education, or other educational institution, and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.”

“I further declare that the ethical principles and procedures specified in the School of Behavioural and Social Sciences Human Research Ethics Committee document have been adhered to in the preparation of this report.”

Name: Michele Bell.

Signed: _____

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The author of this thesis dedicates this work to Scott Piper whose very survival and development continues to be an inexhaustible source of motivation, love and inspiration.

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Abstract

Drawing on Object Relations theories, the current study proposes a theoretical model that helps to understand the effects of prematurity on the psychosocial development of school aged children and the impact the premature birth had on a mother's emotional state. One hundred and thirty four mothers of full-term and premature children completed a measure tapping their own emotional state following the birth of their infant along with the Child Behaviour Checklist concerning their child's current behavioural functioning (74 males, mean age = 9, SD = 2.5) and (60 females, mean age = 9.6, SD = 2.6). In addition, forty-three of these premature and full-term children aged between 9-15 completed a self-report measure tapping their ego maturation (24 males, mean age = 11.4, SD = 1.9; 22 females, mean age = 11, SD = 2.5). This model revealed as anticipated, that the prolonged hospital care of the premature infant, negatively impacts on the mother's level of anxiety, characteristic of normal 'primary maternal preoccupations', which in turn leads to depressive mood. Further, the hypothesis that mother's depressive mood would be associated with their child's internalising, externalising and poorer social behaviours was supported. However, the current model underscores the effects prolonged hospital care has on the infants developing ego, which in turn may predispose the prematurely born child to compromised relational functioning regardless of their mother's emotional well being. It was concluded that the results of this study should be taken as a framework that outlines the psychological processes influencing a premature child's early years of development that is not comparable to those already outlined for full-term children. Given this understanding, clinicians dealing with premature mother-infant dyads can implement preventative strategies that support the development of internal bonding processes operative for both premature mothers and their premature infants.

The Effects of Prematurity on the Social and Emotional Development of School Age Children

Chapter 1

Introduction

Advances in neonatal intensive care have significantly improved the survival rate of premature infants in the past two decades. Modern medical technology has continued to push back the limits of mortality, resulting in more aggressive interventions so that infants as young as 23 weeks gestation with weights as low as 500 grams may now survive (Szatmari, Saigal, Rosenbaum & Campbell, 1994). Data that documents the outcome of these infants also imply that many more infants that are premature remain in hospitals for longer periods than ever before. Prolonged hospital care intrudes upon maternal interactions, and mother-infant bonding, where interactions take place in a newborn intensive care unit, often separating mothers and their infants for long periods of time, resulting in limited opportunities for mothers to feed or nurture their premature infant (Eckerman & Oehler, 1992).

Given these significant delays in early maternal bonding, it is reasonable to suggest that maternal attachment may pose a significant challenge for mothers of premature infants, which may also impact on a mother's emotional state following the discharge of her premature infant. Indeed a large body of research has documented that parents of premature infants continue to show limited maternal responsiveness towards their infant following discharge, and clinicians have long searched for explanations for such caretaking practices (Field, 1977; Minde, 2000). Yet, little attention has been given to the unique experience in the emotional life of the mother in forming a selective and enduring bond with her premature infant.

From a psychoanalytical perspective, Winnicott's (1956) seminal paper concerning a mother's mental life during the immediate post-birth period asserts that following the birth of an infant, the mother's mental life changes from a normal mental state to a heightened state of caring anxiety that he termed 'primary maternal preoccupations'. This condition refers to the mother's obsessive-like involvement with thoughts and concerns for her newborn that is not only typical, but is also crucial to the formation of maternal attachment and subsequent bonding. Moreover, a mother's inability to become totally preoccupied with her infant is considered a risk signal that is likely to result in diminished maternal responsiveness characteristic of maternal depression (Feldman, Weller, Leckman, Kuint & Eidelman, 1999). Accordingly, the first aim of the current study was to explore the consequences the prolonged separation of mothers from their premature infant had on mother's emotional life following the discharge of her premature infant.

In addition, this thesis seeks to understand the potential costs involved in the prolonged separation of infants from their nursing mother on the psychological development of prematurely born children independently of their mothers emotional state. Given that premature infants initial development takes place in a highly technical space, in the face of intrusive and often stressful medical and nursing procedures (Eckerman & Oehler, 1992; Minde, 2000; Goldberg & DiVitto, 2002), it seems likely that prematurity may predispose an infant to significant delays in psychological development. Indeed, premature infants have been described as being less responsive, less attentive, less likely to show positive affect and more likely to be irritable when compared to full-term infants (Field, 1979; Minde, 2000). Because prolonged hospital care has been widely documented, and that premature infant's

beginnings are substantially different when compared to full-term infants, it seems useful to consider a developmental explanation for this pattern of results.

In particular, object relations theory (ORT) which outlines a developmental sequence operative during infancy and progressing through various phases to early childhood, may serve as a useful research tool in the investigation of the psychosocial development of prematurely born children. Briefly, this theory contends that the quality of early parenting in addition to the infant's biological and social capacities modifies the formation of the internal object representation, which governs later relational behaviours (Mahler, Pine & Bergman, 1975). Given the early aberrations in dyadic interactions between mothers and premature infants, it is the assertion of this thesis that ORT may provide a more complete understanding of the complex psychosocial development of prematurely born children than is currently available. Examining these principles in relation to premature children's later personality and in particular behavioural functioning is the main aim of the present study.

This thesis begins with an overview of the empirical literature derived from medical research, commonly labelled the outcome approach, and summarises the data according to how it relates to the psychosocial functioning of prematurely born children. Following this, is an overview of the process literature, which delineates the difficulties faced by mothers following the birth of a premature infant and finally the attachment literature which documents the difficulties prematurely born infants have in the development of secure attachment. Rather than refute these approaches this thesis attempts to deepen the understanding of prematurely born children and their caregiver with complementary psychodynamic perspectives derived from Object Relations theories.

Despite objective criteria defining this condition, prematurity is associated with many factors and is therefore multifaceted. While current research subdivides the population of premature children according to birthweight categories (low birth weight = <2500 g; very low birth weight = <1500 g; extremely low birth weight <1000 g), this thesis draws on an inclusive interpretation of prematurity. That is, prematurity is defined as those children who are born less than 36 weeks gestational age, and spent more than 4 weeks in hospital following birth.

Outcome studies

Half a century ago prematurely born children were described by medical practitioners as suffering from “restlessness, fatigability and nervousness which resulted in diminished concentration and immature relational behaviour” (Benton, 1940). More recently, a general type of investigation examining this population generally labelled the ‘outcome approach’, contends that a considerable number of premature children score highly on various behavioural checklists, primarily on symptoms denoting hyperactivity, low attention span and poor social functioning (Hack, Breslau, Aram, Weissmen, Klein & Borawski-Clark, 1992; Breslau, Brown, DelDotto, Kumar, Ezhuthachan, Andreski & Hufnagle, 1996).

Dominated by the medical model, the outcome approach takes percentages of premature children who score high on various behavioural checklists and categorises them according to birthweight. The majority of outcome studies have focussed upon the intellectual functioning of premature children as a possible factor contributing to compromised psychosocial development (Sykes, Hoy, Bill, Mc Clure, Halliday & Reid, 1997). Findings applying Intelligence Quotient measures indicate that

premature children score approximately a half, to one standard deviation below their peers (Wolke, 1991).

Although important, measures of intelligence, particularly when they fall within the normal range, offer only a limited understanding into the social and emotional development achieved by premature children. For example, Szatmari, Saigal, Rosenbaum and Campbell (1993) compared extremely low birthweight children (ELBW, <1000g) with full-term controls on impairments in adaptive functioning at age eight. Results suggested significantly increased rates of symptoms reflecting Attention Deficit Hyperactivity Disorder (ADHD), which the authors interpreted as being associated with the lower IQ of their premature group. However, premature children with or without small intellectual impairments, were also found to have internalising problems reflecting depression and anxiety along with impairments in social functioning when compared to their full-term counterparts.

Along a similar vein, Breslau, Brown, DeIDotto, Kumar, Ezhuthachan, Andreski and Hufnagle (1996) extended previous findings of premature children aged 6-7 and included those up to 2500g (low birth weight) and also suggested that ADHD applies to this group. Supporting Szatmari et al. (1996) contention, the association between low birth weight children and attentional problems varied by level of IQ. That is, premature children with IQ's > 100 were no more likely to be diagnosed with ADHD than their full-term counterparts. Again however, the premature group as a whole were significantly more withdrawn and presented with more symptoms of anxiety and depression. Unfortunately, the authors offer no interpretation regarding these findings and assume these difficulties are related to birthweight rather than possible problems in psychological functioning. Similar findings were reported by Breslau, Klein and Allen (1988) on very low birth weight children (<1500 g) aged 9,

who were rated as manifesting more emotional distress, and significantly lower social adjustment than controls. However, the associations between the social and emotional difficulties peculiar to the premature group were not related to their intellectual functioning or to birthweight.

Another suggested pathway to compromised development documented in outcome studies is thought to be the generally lower socioeconomic status (SES) of the parents of premature children. Social disadvantage together with biological risk is thought to increase the risk of adverse developmental outcomes. For example, Ross, Lipper, and Auld, (1990) found that premature children in upper SES families had significantly greater social competence and less behavioural problems than premature children in lower SES groups. Although, for each social class category, premature children were rated less optimally on aspects of interpersonal functioning than a normative sample. These findings concur with others such as McCormick, Gortmaker and Sobol (1990) who conclude that the socially disadvantaged, very low birth weight child is at greatest risk for the development of behavioural disorders.

However, agreement with the hypothesis that SES influences the outcome of premature children's psychosocial functioning has not been unanimous, where some authors support this contention (e.g., Smith, Somner, & Von Tezchener, 1982; Hunt, Cooper Tooley, 1988; McCormick, Gortmaker & Sobol, 1990; Ross, Lipper, & Auld, 1990) and others do not (e.g., Escalona, 1984; Sykes, Hoy, Bill, McClure, Halliday & McC. Reid. 1997; Hack, Flannery, Schluchter, Carter, Borawski, & Klein, 2002). Given the mixed evidence, SES will be treated as a possible confounding variable in the current study.

Overall, the above mentioned studies contend that premature children of all birth weights often suffer with symptoms reflecting hyperactivity and low attention

span. These studies imply that variables such as, small intellectual deficits and low birthweight predispose premature children specifically to ADHD. However, all the above mentioned studies also report that premature children with or without minor intellectual impairment also suffer with difficulties in interpersonal functioning and internalising problems denoting anxiety and depression. Further clarification is therefore needed on why these children present with such difficulties. It may still be possible that prematurity confers a general vulnerability to compromised psychosocial functioning, apparent in later problematic relational behaviours.

In addressing this issue, Schothorst and van Engeland (1996) conducted a longitudinal evaluation of the social functioning and behavioural problems in premature children free of intellectual impairment. The follow-up extended from early school age to early adolescence and children were subdivided according to gestational age rather than birth weight. Pertinent to the current investigation are the findings that premature children with relatively low neonatal risks (i.e. those born >32 weeks) appear to function as well as their full-term counterparts. Conversely however, premature children who were born very premature (i.e. < 32 weeks) and those who were small for gestational age, and spent a greater time in hospital, seemed to be at an increased risk of developing social problems and internalising difficulties. In addition, the social problems of premature children appeared to persist with age, and attentional problems were found to be related to the impaired social abilities of these very premature children. This suggests therefore, that the social difficulties of premature children may play some part in the causation of attention problems in premature school age children.

It is interesting to note that the behavioural outcome of children who were hospitalised in early infancy for reasons other than prematurity have also been found

to have compromised psychological functioning. For example, Beavers (1974, cited in Minde, 2000) examined a group of children aged 7-14 who had undergone pervasive medical procedures that required prolonged hospital care in early infancy and compared them with a control group on their psychological functioning. Although the hospitalised group did not differ from the control group in terms of their intellectual functioning or socioeconomic status, they were found to have poorer social functioning and greater anxiety. Similar findings are reported by Shapiro (1978, cited in Minde, 2000), Douglas (1975) and Quinton and Rutter (1976) who found that adolescent children who had undergone various hospital procedures in early infancy demonstrated poorer psychosocial development. Considering these and other similar research findings (e.g. Eiser, 1990; Pless & Nolan, 1991; Minde, 2000), the current study proposes that prolonged hospital care could effect later psychosocial development. As Minde (2000) suggests, children who have experienced prolonged hospital care in early infancy, have about twice the risk of developing an “emotional handicap” such that psychosocial functioning is compromised (pp, 8).

Surprisingly, apart from SES, variables such as length of hospital stay and the caretaking environment are not included in outcome studies as potential factors which may influence premature children’s development. That is, all of the outcome studies reviewed thus far assume a mechanistic orientation toward the processes of child development, that is they interpret development as a linear chain of cause and effects (Sameroff & Chandler, 1975) rather than assuming multicausality. Thus, outcome studies proceed on the assumption that it is possible to specify particular characteristics of the child (i.e. birthweight) or family (i.e. SES) that will permit long term predictions regarding the course of psychosocial development. Process studies however, embrace multicausality and the dynamics of family systems in their

investigation of the effects of prematurity, a condition that this thesis argues cannot be understood meaningfully in terms of individual psychology alone. Accordingly, process studies move beyond a focus on only the child or on only the mother, and attempt to consider the two in combination.

Process studies

Accordingly, process studies focus on how interactions between caregivers and premature infants may serve to compromise or complement psychosocial development (Minde, 2000). Process studies therefore suggest that the final intellectual or behavioural outcome of premature children depends far more on the care these children receive than on their physical complications alone. That is, long-term developmental outcomes cannot be made based on a continuum of biological problems alone. Furthermore, in order to gain predictive validity from the caretaking environment, studies must take into account the particular characteristics of the infant and the complexity of mutual influences that impact on the transactional systemic system that together may serve to amplify or compliment earlier biological difficulties (Sameroff & Chandler, 1975).

Many researchers argue that it is unclear whether the later adverse childhood behaviours associated with prematurity are a function of the prematurity itself, birthweight, the extended period in which infants are placed in incubators, the post natal course, or the social climate in which the child is raised. While investigating each of these variables and their interactions is beyond the scope of the current investigation, it is nevertheless imperative to bear in mind the multifaceted nature and complexity associated with prematurity and later development. This thesis therefore focuses on only a portion of the literature and concentrates on risk factors operative

during the early post-natal period that may be expected to play a pivotal role in the transactional system of psychological development, that is, the premature birth.

The premature birth

A substantial body of descriptive literature suggests that there are three aspects of the parenting experience that are unique to prematurity. These include the interruption of a normal pregnancy, the prolonged hospital experience, and the behavioural patterns peculiar to the premature infant (Minde, 2000; Goldberg & Di Vitto, 2002). This section considers each of these aspects and how they may affect the premature infant, their parents and later childhood development.

Mothers undergo a developmental process during pregnancy associated with the physical movements of their infant in the womb that is an important aspect in the process of prenatal maternal preoccupations and attachment of the mother to her infant (Winnicott, 1956). When this process is suddenly interrupted, the birth changes from a prepared event to an unanticipated emergency associated with anxiety and fear for the infant's very survival. Given that the mother was unprepared for her infant's birth suggests that we have premature parents as well as premature infants (Eckerman & Oehler, 1992). Indeed, the crisis aspect of the premature birth and its associated psychological impact has long been recognised (Pederson, Bento, Chance Evans & Fox, 1987; Minde, 2000; Goldberg & Di Vitto, 2002). In addition, parents soon must come to terms with the fact that they cannot care for their infants, possibly causing anxiety, which may be reinforced by the overwhelming technical environment in which their infants are placed (Field, 1990). That is, instead of looking forward to bringing their newborn home, parents anticipate a prolonged hospital stay, and the possibility of life-threatening complications.

Given the precarious nature of the premature infant to maintain homeostasis, the primary agenda of the NewBorn Intensive Care Unit (NICU) is to maintain the physical well being by means of respiratory machines and incubators (Goldberg & Di Vitto, 2002). As previously mentioned, parents are exposed to a highly technical space that, in its very nature, fails to foster normal parent-infant bonding. For example, infants are fed at particular intervals even if they have to be aroused from a deep sleep and are often subjected to invasive procedures all of which may be contrary to the expected mother-mediated protection from environmental perturbations (Field, 1990; Minde, 2000; Goldberg & DiVitto, 2002).

Consequently, to the extent that the premature infant experiences human contact, it is primarily for medical procedures. Medical procedures alone have been estimated to account for the majority of social and physical contact a premature infant endures whereas, mothers' account for a mere 14 percent (Goldberg & Divitto, 2002). In addition, parent's social interactions with their infants in NICU proceed under very different constraints than those for parents of full-term infants. Observational research suggests that parents become acquainted with their infants for relatively brief periods largely separated in time, and in periods not necessarily related to feeding (Eckerman & Oehler, 1992). Not surprisingly, parents often believe that the medical professionals know better how to care for their infant. That is, others feed their infant, clean their infant and instruct mothers when and how to contact their infant, and decide what is and isn't an emergency (Goldberg & Di Vitto, 2002). Indeed research suggests that, mothers of premature infants often feel alienated from their infants, during their NICU stay (Eckerman & Oehler, 1992). However lower levels of maternal engagement also appear to persist after the infant has reached full recovery and returned home (Minde, 2000).

To determine which factors might contribute to these lower levels of maternal engagement Minde, Whitelaw, Brown and Fitzhardinge (1983) tested variables pertaining to the length of neonatal course and the medical complications of premature infants. The authors compared 20 premature infants with few complications and 20 infants with serious complications during their neonatal course. After controlling for birth weight, gestational age and socioeconomic status, the authors report a clear association between length of stay and mother-infant interaction. That is, in the dyad with the baby who was sicker, the baby's level of alertness and physical activity and the mother's level of maternal engagement were consistently lower, both in NICU and three months following discharge. In a subsequent study, (Minde, 2000) that compared premature infants who had been hospitalised for more than 35 days with premature infants who were discharged within 17 days, the authors again found significant differences in infant and parental behaviours. For the infant who was discharged within 17 days, social behaviours of the infant and mother's responsiveness rebounded immediately following discharge. However, for the infant who spent a significant time in hospital due to immaturity rather than illness, the recovery of maternal behaviour lagged behind the infant's recovery and could still be documented some three months following discharge.

One interpretation of these results is that prolonged separation due to extreme prematurity acts negatively upon maternal behaviour. This interpretation can be understood from Winnicott's (1956) psychoanalytical view of the mother's mental life during the immediate post-birth period. As mentioned previously, Winnicott asserts that in order for a mother to develop a selective and enduring bond with her infant she must be in a temporary state of 'primary maternal preoccupations'. This condition refers to the mother's exclusive and obsessive like involvement with thoughts and

concerns for her newborn. Winnicott contends that a state of heightened anxiety coupled with an exclusive mental focus on the new baby is not only normal but crucial to the formation of maternal attachment and subsequent maternal responsiveness.

Interestingly, these clinical data have recently been supplemented by a study examining the effects of maternal bonding under conditions of proximity, separation and potential loss (Feldman, Weller, Leckman, Kuint & Eidelman, 1999). Concerning the maternal aspect of bonding, characterised by mental representations of the infant, an increase-decrease pattern in response to initial and prolonged separation was found in mothers of term and premature infants. Whereas mothers of term infants experienced medium to high levels of thoughts and concerns for their infants, initial separation increased these preoccupations. However, with prolonged separation these maternal preoccupations significantly decreased. The authors suggest that at a certain point on a continuum from proximity to separation, the highly anxious state of maternal preoccupations appears to turn into disengagement and diminished reactivity which is characteristic of maternal depression.

A large body of research indicating greater anxiety and depression among mothers of premature infants when compared to mothers of term infants supports these data. For example longitudinal studies investigating mother's emotional life following a premature birth report that premature mothers are more likely to experience a heightened state of anxiety one week after the birth. However, premature mothers tend to indicate the most negativity some 45 weeks after their infant has reached full recovery and returned home (Gennaro, 1988). In two other descriptive studies, mothers of premature infants reported two periods of emotional difficulty. The first being immediately after birth and the second being after the baby returned

home (Bidder, Crowe & Gray, 1974; O'Brian, Heron Asay, McCluskey-Fawcett, 1999).

Even mild disruptions in responsiveness due to subclinical depressive symptoms have been shown to increase the risk for compromised attachment patterns in premature dyads and later adverse internalising, externalising and poor social functioning of children (Poehlmann & Fiese, 2001). Further, these mild depressive symptoms show positive associations with neo-natal indices pertaining to the duration of their infant's hospitalisation. Taken together, these findings suggest two outcomes. Firstly, that a highly anxious state in premature mothers may be an important predictor of depressive mood following the discharge of an infant. Further, that premature infants who are separated from their mothers for prolonged periods and whose mothers experience depression or mild feelings of apathy, may be at the greatest risk for the development of internalising, externalising and poor social functioning.

Having established the difficulties of maternal bonding for parents of infants born premature who are separated for extended periods, it should also be noted that following discharge these infants place enormous demands on their parents. Studies that have followed premature dyads shortly after discharge are numerous, and have noted substantial differences in the premature infant as a social partner regardless of mother's emotionality. For example, where behavioural and social differences between premature and term infants are reported, premature infants are found to be less responsive, to show less positive affect (Field, 1979), and to be less initiating and more irritable (Goldberg & DiVitto, 2002; Cox, Hopkins & Hans, 2000). These findings lead Field (1979) and others (Mangelsdorf, Plukett, Dedrick, Berlin, Meisels, McHale, & Dichtellmiller, 1996) to conceptualise the premature infant as having a

relatively high threshold to social stimulation coupled with a low tolerance for behavioural stimulation. That is, premature infants are less socially responsive and harder to soothe.

Attachment literature

Given the differences in interactional patterns noted between premature infants and their mothers, many investigations have anticipated a greater incidence of insecure attachment patterns in premature infant-mother dyads. However, a large body of research has failed to support this expected association (e.g., Goldberg, Perrotta, Minde, & Corter, 1986; Easterbrooks, 1989; van Ijzendoorn, Goldberg, Kroonenberg and Frenkel, 1992). In fact, in a meta-analysis of attachment studies conducted on clinical samples including premature mother-infant dyads, van Ijzendoorn, Goldberg, Kroonenberg and Frenkel (1992) concluded that the premature birth was not likely to affect attachment relationships. However, close scrutiny indicates that the premature infants in their meta-analysis were of relatively low-risk by contemporary standards. That is, the mean birth weight of these infants was above 1500 grams and their gestational age was greater than 30 weeks. Therefore, the sample of studies investigated may not be representative of the range expected in premature populations which may be needed to influence the effects of prematurity on attachment?

Indeed, when premature mother-infant dyads have been examined according to various risk factors, differences in attachment security do emerge. For example when high-risk premature infants are compared to low-risk premature infants, the former is often found to be insecurely attached (Plunkett, Meisels, Stiefel, Pasick & Roloff, 1986; Willie, 1991; Mangelsdorf, Plunkett, Dedrick, Berlin, Meisels, McHale, & Dichtellmiller, 1996). Plunkett et al. (1986) interpreted these findings to suggest

that prolonged separation may cause anxiety and depression in mothers and that this emotional state coupled with an infant who is hard to soothe may lead to insecure attachment. This interpretation is consistent with attachment (Bowlby, 1958) and transactional theories (Sameroff & Chandler, 1975), as it suggests that both maternal and infant characteristics contribute to the quality of the dyadic relationship. It should be noted that results from two of these studies suggest a tendency for high-risk premature infants to shift from security to insecurity over time rather than toward security, as is often seen in full-term samples (Plunkett, Meisels, Stiefel, Pasick & Roloff, 1986; Mangelsdorf, Plunkett, Dedrick, Berlin, Meisels, McHale, & Dichtellmiller, 1996). This therefore suggests that the effects of early aberrations in maternal and infant bonding may become more pronounced over time. These findings concur with Greenberg, Carmichael-Olson and Crnic, (1992) who have documented secure attachment patterns in premature children at age one year, yet found insecure attachment patterns in the same group some four years later. Mangelsdorf et al (1996) interpret similar findings to suggest that delays in mental and physical development of premature children may also extend to delays in the attachment system. Therefore, assessment of attachment patterns in the first year of the premature child's life may not be an accurate assessment of the relationship between premature infants and their mothers.

The process and attachment studies described thus far, support the assumptions of the transactional model first described by Sameroff and Chandler (1975) in that they emphasise how maternal and infant vulnerabilities contribute to the quality of early relationships and out of these mutual influences, development proceeds. In addition, Horowitz (1992) emphasises that in order to progress beyond the results already obtained, research needs to be better informed of the constituent

components of the transactional system which may play a pivotal role in some developmental outcomes and not others. According to Magyary Brandt, Hammond, and Barnard, (1992) both mother and infant's attachment processes during the early post-natal period may play a pivotal role in the social and emotional functioning of premature children's later development.

An Object Relations Perspective

The ability to form a selective and enduring bond is considered a fundamental feature of human experience and according to some theorists, plays a pivotal role in the process of personality development (Mahler, Pine & Bergman, 1975). Present theories of bonding behaviours stem from observational research and in general, poorly developed infant bonding with the main caregiver is thought to negatively impact on children's later attachment and explorative behaviours (Ainsworth & Bowlby, 1989).

Attachment has generally been understood as one's working model or bonding quality of relatedness to specific significant others such as the mother and later romantic relationships (Bowlby, 1973). Given the emphasis on processes that determine the quality of interpersonal relatedness, many researchers suggest that attachment theories clearly overlap into Object Relations theory (Buelow, McClain & McIntosh, 1996; Murray, 1991; Fishler, Sperling & Carr, 1990; Behrends & Blatt, 1985). Pertinent to the current investigation however, is the subtleties between attachment and object relation's perspectives on relatedness. Whereas attachment bonds are present in some but not all relationships, object relationships are global and encompass virtually all relationships (Fishler, Sperling & Carr, 1990; Buelow, McClain & McIntosh, 1996).

Object Relations theory as represented empirically by Mahler's, Pine and Bergman (1975) work concerning the psychological birth of the human infant generally assumes that, although the infant has an innate relational capacity, the developmental sequence which progresses through various phases of attachment culminates in individuation and personal autonomy. Emerging from interactions with the primary caregiver, the infant develops a capacity for relating to self, others and world. Thus, the capacity for human relations becomes an important indicator for social and emotional functioning (Mahler & Kaplan, 1977; Behrens & Blatt, 1985; Levine, Green & Millon, 1986; Murray, 1991).

The developmental sequences Mahler, Pine and Bergman, (1975) outline, involve six phases: normal autism, symbiosis, differentiation, practicing, rapprochement and the consolidation of individuation and personal autonomy. Pertinent to premature children however, are the first two stages (i.e., normal autism and symbiosis) which may well be operative during the neonatal stay. In the first few weeks of life, the infant exists in a very dependent state, unable to make symbolically meaningful discriminations between self and environment. The mother's role in this phase is to attune herself to her infant's signals of crying, cooing, smiling grimacing and the like. These signals are thought to arouse the mother's identification with her infant, enabling her to attribute to the infant the pleasure or distress she would be feeling if she herself were to behave in such a way. The establishment of the mother-infant unity represents the first developmental prerequisite for internalisation. If, all needs are gratified by the primary caregiver the infant experience's security, protected from anxiety.

Following normal autism, the infant begins to differentiate self from primary caregiver. This developmental stage, termed symbiosis, is where the primary

caregiver and child both contribute to the relationship. Intuitively, the mother actively begins to foster the child's separation, due to her sense that a dual unity is no longer warranted or necessary for either infant or mother. If such disruptions do not exceed the infant's adaptive capacities, the child is endowed with the ability to manage the losses of the mother-infant dual unity through the process of internalisation resulting in the psychological birth.

According to this developmental model, the child's ongoing transactions with the mother are internalised in the form of self and object representations. Object representations are theoretical constructs used to describe cognitive and affective schemas resulting from mother-infant interactions that organise current interpersonal perceptions. Although this developmental model has certain commonalities with Bowlby's (1973) theory of attachment, its adherence to later global relational functioning gives it particular relevance to the psychosocial development of prematurely born children who may have remained in hospital during these developmental stages.

Although Object Relations theory concerns itself with speculations about early development, most empirical literature focuses primarily on adult experiences with few exceptions investigating relatedness in early childhood. One such study however empirically tested the relationship of social and emotional functioning to the level of object relations in a normative sample of children aged 9-12 (Avery & Ryan, 1988). In this study, children with greater object relation's maturation perceived themselves as more socially confident, reported greater self-esteem and were less likely to present with internalising problems reflecting anxiety and depression than children with low object relation's maturity.

Summary of research findings

In summary, the process literature documented in this thesis highlights the unique experience parent's face when they have given birth to a premature infant. Firstly, the mother's pregnancy is suddenly interrupted which changes the birth from a prepared event to a crisis associated with anxiety for their infant's very survival. In addition, the mother's attachment to her infant proceeds under very different circumstances where interactions take place in a highly technical space, largely separated in time and not necessarily associated with feeding or nurturing her infant.

Still another set of events that appears to affect interactions between mother's and their premature infants is associated with the disruption of some basic psychological parameters linked with the mothers mental life following the birth of her infant. With prolonged separation the mother's psychological state which begins with normal maternal preoccupations reflecting a slight increase in caring anxiety appears to turn into an abnormally high state of anxiety, disengagement and diminished reactivity characteristic of depression (Feldman, Weller, Leckman, Kuint & Eidelman, 1999). Yet, after the premature birth there is little time to adjust to this unforeseen event before the demands of the premature infant who is often described as less socially responsive and harder to soothe must be met (Goldberg & DiVitto, 2002; Cox, Hopkins & Hans, 2000; Field, 1979). Not surprisingly, much research documents a higher prevalence of depression among mothers of premature infants in both the hospital environment and some 3 months following discharge (Bidder, Crowe & Gray, 1974; O'Brian, Heron Asay, McCluskey-Fawcett, 1999).

Moreover, studies that document the attachment patterns of premature infants suggest that those very premature infants who are separated from their mothers for prolonged periods do tend to develop insecure attachment patterns (Plunkett, Meisels,

Stiefel, Pasick & Roloff, 1986; Willie, 1991; Mangelsdorf, Plunkett, Dedrick, Berlin, Meisels, McHale, & Dichtellmiller, 1996).

In keeping with an Object Relation's perspective, how a child views others as accessible and responsive, and how they view themselves as preferring close relationships, is directly influenced in early infancy by the quality of early object introjects, most importantly the mother. That is, substantial aberrations in early bonding between the mother and infant may have a negative affect on the child's ego maturity which would be expected to impact on later psychosocial functioning. Indeed both theory and empirical evidence from outcome studies support the notion that premature children are more likely to suffer with internalising problems denoting anxiety and depression, and to have social difficulties that persist into early adolescence (e.g. Hack, Breslau, Aram, Weissmen, Klein & Borawski-Clark, 1992; Breslau, Brown, DelDotto, Kumar, Ezhuthachan, Andreski & Hufnagle, 1996; Szatmari, Saigal, Rosenbaum & Campbell, 1993).

Aims of the research and hypotheses

As a precursory aim, the current study sought to investigate the influence that prolonged separation of mothers from their premature infants had on the mother's emotional state. As shown in Figure 1, it was hypothesised, in line with Feldman et al. (1999) empirical investigations regarding initial and prolonged separation, that the prolonged hospitalisation of premature infant's would negatively impact upon the mother's emotional state. More specifically, it was anticipated that the separation of mother's from their premature infants would lead to an increase in self-reported caring anxiety, which in turn leads to greater depression in mothers.

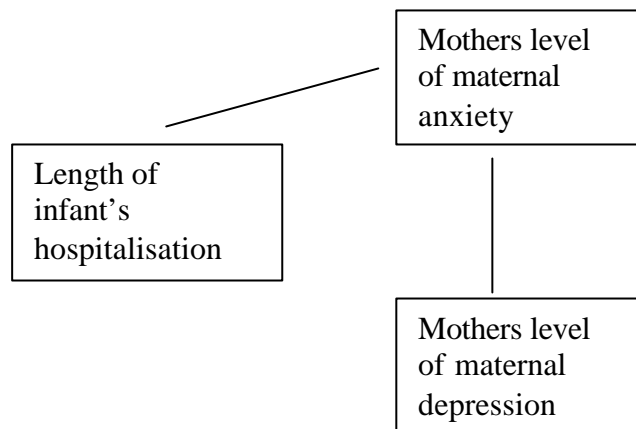


Figure 1. *Expected pathways predicted between length of infant's hospitalisation and mothers emotional state.*

Given the well established link presented in previous research that mothers emotional state has developmental implications for premature children's adverse behaviours (e.g., Poehlmann & Fiese, 2001), Figure 2 hypothesises that increased levels of depression following the discharge of infants would be predicative of increases in children's externalising, internalising and adverse social behaviours. However, in line with Winnicott's (1956) theory concerning mothers' 'maternal preoccupations', an increase in caring anxiety was not expected to predict children's adverse behaviours, but rather depression is predicted to mediate the relationship between a heightened anxious state and compromised child outcomes namely, internalising, externalising and poorer social functioning.

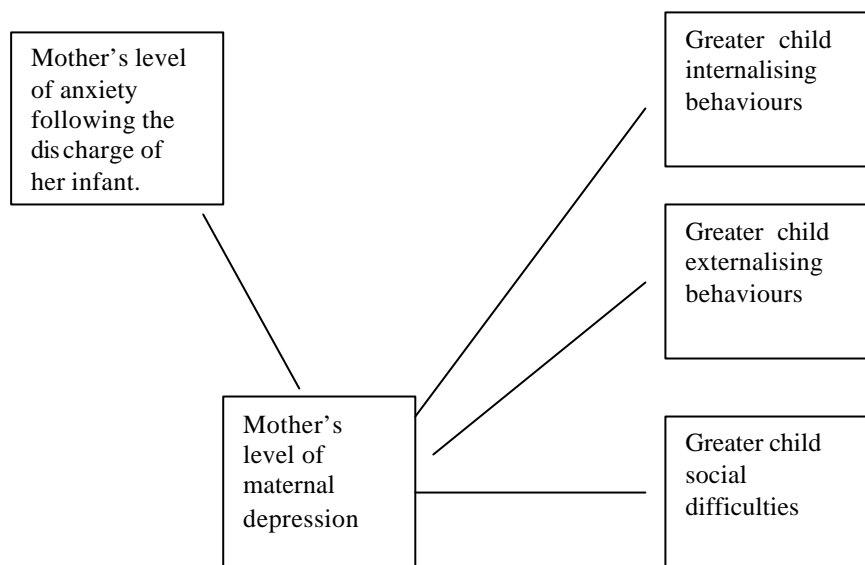
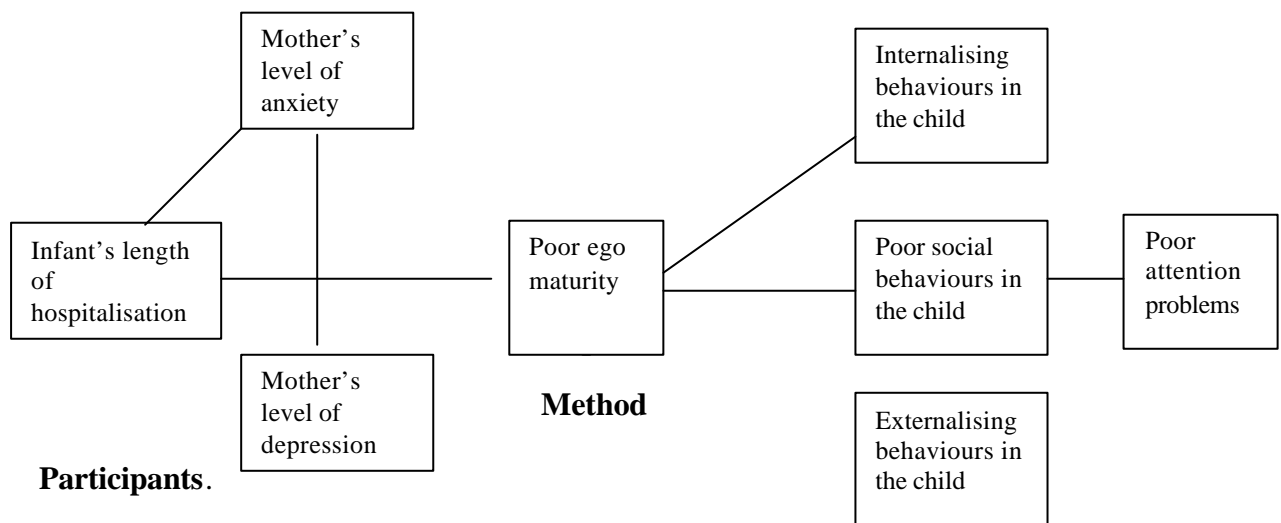


Figure 2. *Expected pathways between length of infants hospitalisation, mother's emotional state and later child behaviours.*

The overall aim of the current study however, was to extend previous research concerning the effects prematurity has on mother's emotional well-being and later childhood behavioural functioning, by examining the unique effects prolonged separation has on the child's current personality and behavioural functioning. Consequently, this thesis argues that the prolonged separation of infant's from their mothers will result in adverse developmental consequences for the infant over and above mother's emotional state. That is, by including the ego maturity of prematurely born children into the model the effects of mother's depression on later adverse childhood functioning are expected to disappear.

In line with Object Relation's theory concerning the psychological birth of the human infant (Mahler, Pine & Bergman, 1975) it was further predicted that prolonged hospital care would have a unique negative impact on premature children's ego development over and above mother's emotional state. Furthermore, ego strength is hypothesised to mediate the relationship between mother's depression and the

internalising and social behaviours in premature infants who were separated for prolonged periods. Finally, consistent with Schothorst and van Engeland (1996), attention problems are predicted to be directly related to the social difficulties of premature children. In summary, as illustrated in Figure 3, a direct pathway between length of infant's neo-natal course and ego maturity is expected, over and above the effects of the mother's emotional state, which in turn leads to internalising and adverse social behaviours. Problems in social functioning are then expected to explain the development of attention problems in premature children. In order to add further validity to the notion that poor ego maturity is linked to specific outcomes, namely internalising and poor social functioning (Avery & Ryan, 1988), externalising behaviours are hypothesised to show no significant direct link with either prolonged separation or ego maturation.



Mothers who had given birth to a premature infant and whose child was currently the age of six years or above were identified via several premature internet forums and via acquaintances of the researcher (www.premmiechild.com; www.austprem.com.au; thepremmieplace.org; premmietoddler.com). The researcher

contacted the coordinators of the premature forums and was given permission to advertise the research online in order to recruit participants. A standard survey methodology was employed using Swinburne University's Surveyor © online survey system. A summary of the research findings was placed on the Internet forums in return for participation. Mothers who had given birth to a full-term infant whose child was now aged six years or over were also obtained through a first year psychology student pool at Swinburne University and via acquaintances of the researcher.

The entire sample consisted of 134 parental reports concerning current child behaviours and mothers retrospective self-reported emotional state following the discharge of her infant from hospital. Children's ages ranged from 6-15 yrs, 74 males (\underline{M} =9 years, \underline{SD} = 2.5 years) and 60 females (\underline{M} =9.6 years, \underline{SD} = 2.6years). The children of the mothers who were aged nine and above were also asked to participate in the study with the permission of their parent. A total of 46 children completed 1 self-report measure, and of these, 24 were male (\underline{M} = 11.4 years, \underline{SD} = 1.9 years) and 22 were female (\underline{M} = 11 years, \underline{SD} = 2.5 years). Background and demographic characteristics of the parents and children included in the entire sample are summarised in Table 1 below.

Table 1
Characteristics of Premature and Full-term Children

Children and Mothers' Characteristics	Group	
	Premature	Full-Term
Children's Characteristics		
N	80	54
Mean gestational age in weeks	27.5 (3.1)	39 (1)**
Mean days in hospital	81 (45)	5 (2)**
Mean birth weight in kilos	1098 (580)	3445(565)**
Current mean age of child in years	9 (2)	9.8 (2)
Percentage of males	58	50
Mothers Characteristics		
Mother's age at the time of her infant's birth		
% 15-24	14	9
% 25-30	35	39
% 31-35	29	35
% 36-40	16	9
% 41+	6	7
Education Level		
% Completed Yr 12 or below	6	20
% Partially completed a degree	40	34
% Completed a degree	24	18
% Postgraduate education	30	26
Socioeconomic Status		
% Low	6	10
% Medium	78	70
% High	16	20
Marital status at the time of infant's birth		
% Married or in a defacto relationship	90	96
% Single	10	4
Current marital status		
% Married or in a defacto relationship	89	77
% Single	11	33

Note: Significant differences between the groups were calculated using Chi-square and t-tests on all variables. * $p < 0.05$; ** $p < 0.001$. Values enclosed in parenthesis represent standard deviations.

As can be seen in Table 1, the groups were of equivalent age, gender, social class, maternal age, education and marital status. In addition, as would be expected the groups were significantly different on birthweight, gestational age and length of hospitalisation. Given that there were no significant differences in SES between the groups, SES did not need to be controlled for in the current study.

Materials

The questionnaire package was completed anonymously by mothers and comprised of demographic data, infant neo-natal details, mothers perceived caring anxiety and depression at the time of her infant's discharge and a behavioural checklist concerning the child's current behaviour and social functioning. Attached to the parent's questionnaire was one questionnaire completed by children aged nine and above. The child survey purports to tap ego maturity. A copy of the questionnaire is attached as Appendix A.

Neonatal Measure

Children neonatal course and parents retrospective emotional state was assessed with a questionnaire devised by the researcher to determine two areas: children's relevant medical details, and mothers level of caring anxiety and depressive mood following her infant's discharge.

The child's medical course was assessed with items regarding the child's birthweight, gestational age, length of hospital stay and further admissions following discharge. Parents were asked to respond in written text.

Mother's perceived level of depression and caring anxiety following her infant's discharge was measured with two single items (i.e. 'please indicate how much depression you may have experienced after your baby came home' and 'did you feel anxious about caring for your infant following their discharge'). Responses available

were from 1= no depression to 5=diagnosed with a depressive mood and 1 = not anxious to 3=very anxious respectively. In order to assess criterion validity, two one way ANOVA's were conducted that revealed significant differences between the two parent groups. As expected premature parents reported greater caring anxiety ($F(1,132) = 30, p = <.001, \eta^2 = .18$) and depressive mood ($F(1,132) = 31, p < .001, \eta^2 = .20$) than full term parents following the discharge of their infant.

Child Behavior Checklist

Each parent completed the parental report form of the Child Behaviour Checklist (CBCL: Achenbach & Rescorla, 2001), which assesses behavioural maladjustment and social functioning along with intellectual and physical disabilities. The CBCL requires the parent to indicate the applicability of 113 items for their child currently and in the previous six months (e.g., 'Clings to adults or too dependent'; 'Would rather be alone than be with others'; 'Doesn't get along with other kids'). Responses available were on a 3 point scale, where 0 = not true (as far as you know), 1= somewhat true and 2 = very true or often true, resulting in scores ranging from 113-339. Raw scores can be used to calculate eight narrow-band factors labelled: Anxious/Depressed; Withdrawn/Depressed; Somatic Complaints; Social Problems; Thought Problems; Attention Problems; Rule Breaking Behaviour and Aggressive Behaviour. High scores indicate greater behavioural problems in each of the factors. The present study utilised the factors Anxious/depressed; Withdrawn/ Depressed; Social Problems; Rule Breaking Behaviour and Aggressive Behaviour. Reliability coefficients for these factors are reported to be between .78 and .88 (Achenbach & Rescorla, 2001).

In addition, scores on the behavioural problem scales, Anxious/Depressed, Withdrawn/Depressed and Somatic Complaints are summed and assigned to a broad-

band factor, labelled Internalising; and scores on the scales, Rule Breaking Behaviour and Aggressive Behaviour are summed and assigned to an Externalising score. However, the current study excluded Somatic Complaints from the Internalising broad-band factor as the current study was primarily interested in the psychological aspects of internalising. In addition, recent research indicates that premature children may be more susceptible to somatic complaints due to ongoing medical complications warranting its exclusion from the analysis (Szatmari, Saigal, Rosenbaum & Campbell, 1994). Reported reliability coefficients for the Internalising and Externalising factors are $\alpha = .90$ and $\alpha = .94$ respectively (Achenbach & Rescorla, 2001).

The Attachment Object Relations Inventory

Children's ego maturity was measured using a modified version of the Attachment Object Relations Inventory (AORI). The AORI is a 60-item questionnaire containing two factors designed to tap an individual's ego development and attachment styles on a dimensional rather than categorical scale (Buelow, McClain & McIntosh, 1996). The factor representing attachment includes three 10-item sub-scales designed to tap views of the self as able to form close, secure and independent attachments. The Object Relations factor includes three 10-item sub-scales designed to tap perceived accessibility and responsiveness of peers, parents and partners. The current study utilised the 3 object relations subscales along with the Independent subscale as a measure of ego maturity. In the present study the factor 'partner' was modified to 'best friend' to fit the current studies age group. Other items were also simplified or removed in order to be appropriate for the population of interest. An example of an item that was decided by the investigator to be too difficult for children aged 9-12 was 'my family is dysfunctional'. This item was changed to 'my family is a mess'. All changes are included as Appendix B. These modifications resulted in a 39-item

questionnaire. Items were scored on a 5 point likert scale from 1=strongly disagree to 5= strongly agree, resulting in scores ranging from 39-195. High scores indicate greater ego maturity. Reported internal consistency for the inventory is reported as .93 (Buelow, McClain & McIntosh, 1996). Scales representing views of others as accessible and responsive were: peers ($\alpha=.91$); parents ($\alpha=.89$); and partners ($\alpha=.91$). Factors representing views of self were: independent ($\alpha=.71$). The AORI was normed on adolescent and adult populations (Buelow, McClain & McIntosh, 1996). Prior to analysis, negatively worded items on the Attachment Object Relations Inventory (AORI) were reversed, so that higher scores indicated greater ego maturity. All scales were then calculated to obtain total scores.

Chapter 3

Results

Data was analysed using SPSS for Windows, version 10. In order to maximise the available data, missing values were replaced with the item mean for both the premature and the full-term sample. Tabachnick and Fidell (1996) recommend this method of estimation of missing data, provided that it is randomly distributed. Data screening revealed no univariate outliers, but one multivariate outlier that reflected a case whereby length of hospitalisation was relatively high. Given that this is to be expected in the premature sample, it was not excluded from the analysis. All target variables were normally distributed.

As described in the method section, only 43 children from 134 parental responses participated in the study. Therefore, where applicable comparison analyses were calculated between the entire sample ($n =134$) and the child sample ($n =43$). Internal consistency of each measure was calculated, and along with intercorrelations, means and standard deviations of all target variables for both the samples are presented in Table 2 below

Table 2.
Internal Consistencies, Intercorrelations, Means and Standard Deviations of Target Variables

	1	2	3	4	5	6	7	8
1)Length of Hospitalisation	1.0							
2)Mothers Depression	.37** .47**	1.0						
3)Mothers Anxiety	.33** .58**	.46** .57**	1.0					
4)Child's Ego strength	-.32* -.32*	.11 .11	.03 .03	(0.90)				
5)Child's Internalising	.31** .37*	.24** .56**	.15 .01	.00 .00	(0.86)			
6)Child's Social problems	.40** .43**	.35** .52**	.21* .37*	-.29 -.29	.76** .73**	(0.81)		
7)Child's Externalising	.09 .04	.21* .17	.06 .13	-.10 -.10	.56** .63**	.64** .66**	(0.91)	
8)Child's Attention	.36** .33*	.35** .42**	.12 .24	-.10 -.10	.54** .62**	.68** .57**	.62** .65**	(0.88)
M	51 45	2.0 1.6	2.1 1.8	160 159	6.5 6.0	3.8 2.6	8.6 6.8	5.6 4.1
SD	52 57	1.2 1.0	.69 .73	18.1 18.3	6.1 5.7	3.8 3.1	8.0 6.7	4.7 4.0
N	134 43	134 43	134 43	43 42	133 42	133 42	133 42	133 42

Note: *denotes $p < 0.05$; **denotes $p < 0.01$, 2 tailed. Cronbach's Alpha, in brackets; Correlations, Means and Standard Deviations in bold represent the sample in which the children participated (n =43).

As can be seen in Table 2, although generally the significance levels were similar across groups the magnitudes of the correlations were different between the groups. For example, mothers' anxiety and depressive mood revealed a higher correlation with length of hospitalisation relative to the entire sample. In addition, mothers' negative emotionality revealed a stronger association with children's adverse social and attention problems when compared to the complete sample. Given that

these differences could be due to sample sizes (Tabachnick & Fidell, 1996), results were discussed with respect to the entire sample. Furthermore, t-tests were performed on the means of the two groups, which revealed no significant differences between the groups.

Corroborating previous research, mother's self-reported depression and anxiety evidenced a significant and positive correlation with length of infant's hospitalisation, indicating that prolonged hospitalisation is associated with increases in mother's level of depression and anxiety. Furthermore, mother's depression was associated with children's adverse social, internalising and externalising behaviours while anxiety revealed a significant positive relationship with poorer social behaviours. In addition, length of hospitalisation revealed a significant negative association with child's ego strength, suggesting that prolonged hospital care negatively impacted upon ego development. Further, ego maturity revealed a negative but statistical borderline ($p < .06$) relationship with children's social behaviours, suggesting that poor ego maturity was associated with poorer social functioning. Children's internalising and social behaviours also evidenced a significant positive correlation with length of hospitalisation, suggesting that duration of hospitalisation may have a negative impact upon later social and internalising behaviours. Furthermore, the child's externalising behaviours was not significantly related to prolonged hospital care or mothers caring anxiety rather, high levels of externalising behaviours were significantly associated with higher levels of reported maternal depression. In addition, it should be noted that although birthweight is not a variable of interest in the current study, length of stay was significantly and negatively associated birthweight ($r = -.82, p < .001$). This suggests that the lower the birthweight of an infant the more time the infant spent in hospital.

Regression Analysis of Target Variables

In order to test the hypothesis that prolonged hospitalisation of premature infants negatively impacts on mothers emotional state, two regression equations were computed. Firstly, length of infant's hospitalisation was entered as a predictor variable and mother's self-reported anxiety was entered as the dependent variable. To test the prediction that caring anxiety mediates the relationship between prolonged hospitalisation and mothers self-reported level of depression a second equation was computed. The predictor variable was both infants' length of hospitalisation and mothers' level of anxiety and the dependent variable was mothers' self-reported depressive state. The results of these analyses are presented in Figure 4.

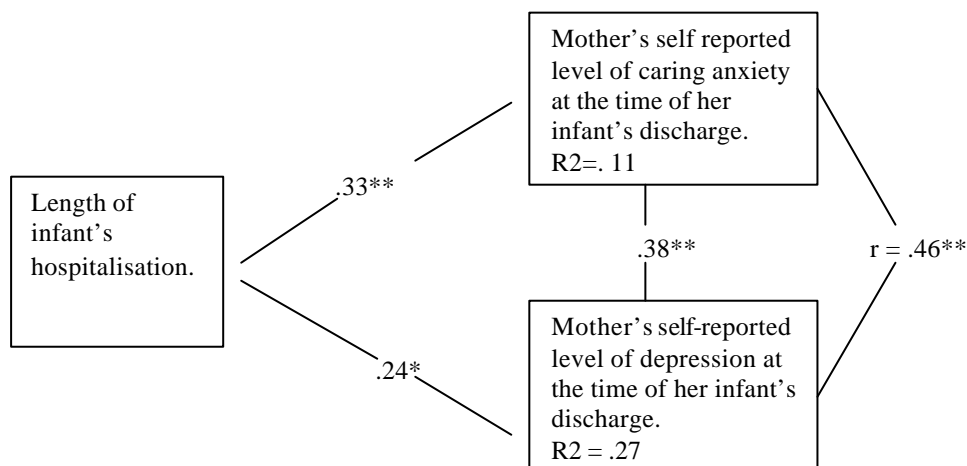


Figure 4. The effects of separation of mother's from their infant.

Note: ** denotes $p < 0.001$, *denotes $p < .05$

As illustrated in Figure 4 prolonged separation of mother's from their premature infant's significantly and directly predicted mother self-reported anxiety ($\beta = .33$, $t = 4.0$, $p < .001$, $n = 134$). This suggests that mother's level of anxiety increases with prolonged separation. This model explained 11% of the variance in mother's level of anxiety. Figure 4 also reveals that caring anxiety partially mediates

the relationship between prolonged hospitalisation and mothers' depressive state (indirect effect =.12). This suggests that the prolonged separation of premature infants may lead to an increase in mothers depressive state and that this increase is partly due to an increase in the mothers caring anxiety ($\beta = .38, t = 4.8, p < .001, n = 134$). In addition, prolonged separation revealed a direct effect on mothers level of depression ($\beta = .24, t = 3.0, p < .05, n = 134$), suggesting that prolonged separation has a direct and unique effect upon mothers depressive mood ($\beta = .24, t = 3.0, p < .05, n = 134$).

To examine the effects of mother's negative emotional state at the time of her infant's discharge upon her child's later behavioural functioning, three further regression equations were computed. The predictor variables for all these equations were mothers self-reported level of depression and anxiety following the discharge of her infant. The outcome variables were parental reports of their child's internalising, externalising and social behaviours respectively. The results of these regression equations are presented in Figure 5.

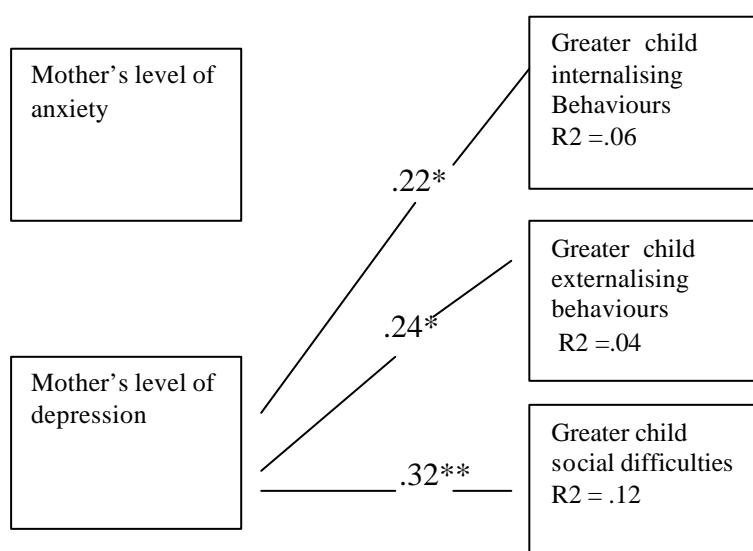


Figure 5. The effects of mothers emotional state on children's behavioural problems. Note: * denotes $p < 0.05$; **denotes $p < .001$

As shown in Figure 5, mothers self reported level of depression following the discharge of her infant significantly predicted child's internalising ($\beta = .22$, $t = 2.3$, $p < 0.05$, $n = 133$), social ($\beta = .32$, $t = 3.5$, $p < .001$, $n = 133$) and externalising behaviours ($\beta = .24$, $t = 2.5$, $p < 0.05$). This suggests that mothers depressive state adversely impacts upon children's later behaviours in that, high levels of depression were associated with greater externalising, internalising and poor social functioning. However, mother's level of anxiety following the discharge of her infant was not predicative of children's later problem behaviours.

To test the prediction that infant's prolonged hospital care has a unique and negative impact on child's ego strength over and above mother's emotional state and that weaker ego strength mediates the relationship between mothers emotional state and their child's internalising, social behaviours but not externalising behaviours, four further regression equations were computed. The first equation included mother's level of depression, anxiety and infant's length of hospitalisation as predictor variables and child's ego strength as the dependent variable. Subsequent equations included mother's self-reported depression, anxiety, length of infant's hospitalisation and child's ego strength as predictor variables and child's internalising, externalising and social behaviours respectively, as dependent variables.

Finally, to test the hypothesis that attention problems are related to the social difficulties experienced by premature children, one further equation was computed. This equation included length of hospitalisation, mother's anxiety and depression, ego maturity and social functioning as predictor variables and attention problems as the outcome variable. Results of the entire model are presented in Figure 6 below.

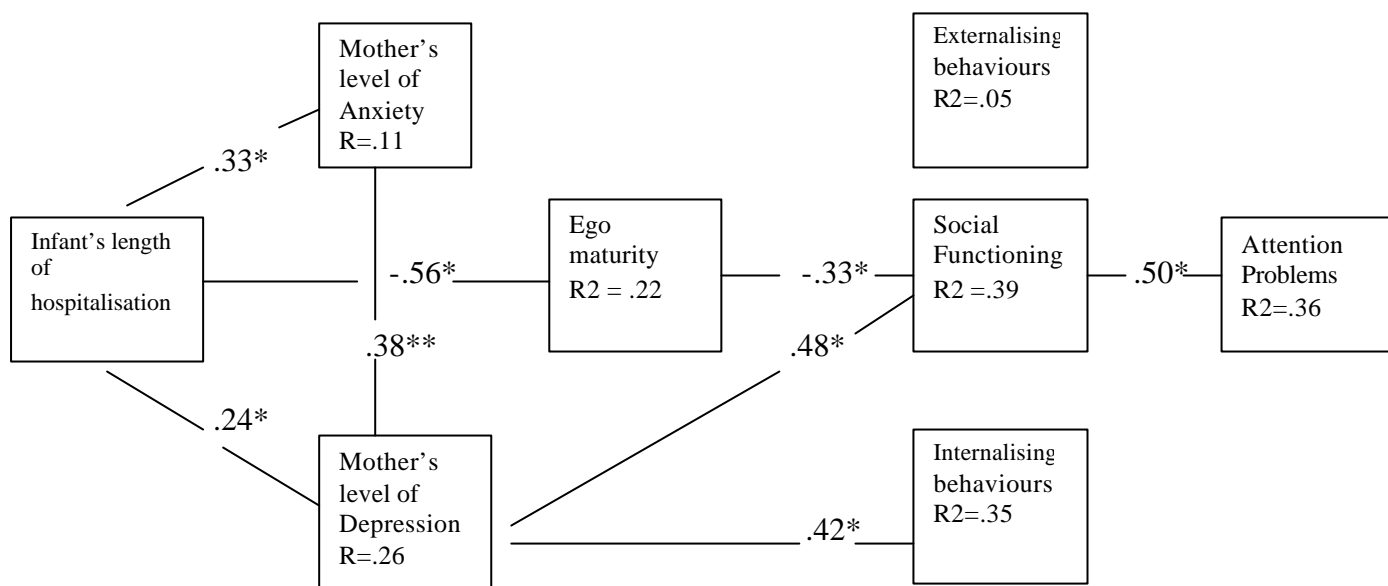


Figure 6: The effects of prolonged separation of infant's from their mother's on the social, internalising and attention problems of children over and above mother's depression.

Note: * denotes $p < 0.05$; **denotes $p < .001$.

As illustrated in Figure 6 a direct pathway between length of infant's neo-natal course and ego maturity was revealed ($\beta = -.56$, $t = -3.2$, $p < .05$). This suggests that regardless of mother's emotional state at the time of her infant's discharge, prolonged separation had a unique and negative effect upon children's ego development. In addition, prolonged separation also had an indirect effect (indirect effect = .18) on child's social functioning via ego maturation, suggesting that infant's who are hospitalised for prolonged periods are more likely to have poorer social relations as adolescents because of their weaker ego maturity ($\beta = -.33$, $t = -2.2$, $p < .05$). Length of hospitalisation and ego strength together therefore explained 18% (i.e. $.56 \times .33$) of the variance in social behaviours. Furthermore, mothers depression had a direct effect on children's social ($\beta = .48$, $t = 3.0$, $p < .05$) and internalising behaviours ($\beta = .42$, $t = 2.5$, $p < .05$), suggesting that an additional 23% (i.e. $.48 \times .48$) of the variance in children's adverse social functioning and 18% (i.e. $.42 \times .42$) of children's

internalising behaviours can be explained through mothers depressive state. Finally, there was a direct link from social functioning to attention problems, suggesting that premature children who are hospitalised for prolonged periods are more likely to have attention problems because of their poorer social functioning and their poorer ego maturation ($\beta = .50, t = 2.9, p < .05$). Overall, 36% of the variation in attention problems is explained by this model.

Chapter 4 Discussion

Overall, the results of the current study support the hypothesis that the prolonged separation of mothers from their premature infants negatively impacts on mother's mental state following the discharge of her infant. Furthermore, evidence was found for the prediction that mother's depressive state, following the discharge of her infant, had a direct effect on later childhood functioning. That is, increased levels of depression were found to be directly associated with an increase in internalising, externalising and poorer social behaviours amongst their children. The overall aim of the current study was to investigate the ego maturity of premature children and whether or not the prolonged separation of infants from their mother's negatively impacts upon the developing ego as represented by Mahler, Pine and Bergman (1975), concerning the psychological birth of the human infant.

The prediction that the prolonged separation of infants from their mothers would negatively impact on children's ego development over and above mother's emotional state was supported. In addition, some support was found for the hypothesis that ego maturity mediates the relationship between mother's depression and premature children's poorer social functioning. However, the hypothesis that poor ego maturity would mediate the relationship between mother's negative emotionality and

their child's internalising behaviours failed to be supported in the current study. The prediction that externalising behaviours would not be associated with either ego maturity or prolonged hospital care, was also supported by the results of this study. Finally, the prediction that social problems would be related to the development of attention difficulties in premature children was also supported.

Premature mothers emotional life

The findings that the separation of mothers from their premature infants combined with an increase in maternal caring anxiety leads to depressive mood was consistent with Feldman, Weller, Leckman, Kuint and Eidelman (1999), investigation into the psychological processes of a mothers mental life following the birth of a premature infant. Guided by Winnicott's (1956) psychoanalytical account of a mother's mental life during the bonding stage, Feldman et al. reported that mothers who were separated for brief periods of time displayed a significant increase in maternal separation anxiety. However, with prolonged separation, the mother's mental state, which is characteristic of 'primary maternal preoccupations' develops into a state of depression and ultimately limits the mother's capacity to engage in the pleasurable, relationship-building aspect of bonding. While the evidence in the current study is retrospective, the strong suggestion is that the prolonged separation of mothers from their premature infants in the early postnatal period leads to an increase in caring anxiety which in turn leads to depressive mood. Moreover, the current study assessed mothers' level of depression after the infant had returned home which suggests that the effects of prolonged separation may not be immediately reversible following the discharge of her premature infant.

Taken together these findings suggest that a highly anxious state in mother's of premature infants may indeed play some part in the causation of depressive mood following the transition from hospital to home. However, it should be noted that length of stay also directly and independently led to mother's self-reported depressive mood for reasons not explained in the model. A possible explanation for these unexpected findings may be that mothers' negative emotional state following the apparent recovery of her infant reflects further concerns about possible disabilities or other later difficulties of the infant (Minde, 2000; Goldberg & DiVitto, 2002).

The effects of mothers emotional state on premature children's development.

Regarding the findings that mother's depressive mood is directly associated with children's adverse social, internalising and externalising behaviours is also consistent with a large body of literature that documents similar behavioural outcomes in full-term children whose mothers suffer from post-natal depression (for a review see, Gelfand & Teti, 1990). However, the results of this study point to the sensitivity of premature infants' to mother's sub-clinical symptoms of depression. In the current study, 22% of mothers reported feeling 'often depressed', 30% reported only a slight increase in depressive feelings and an additional 12% of mothers reported being diagnosed with a depressive mood in the premature group. Corroborating previous research (e.g., Poehlmann & Fiese 2001), these results provide tentative support for the notion that premature children are particularly susceptible to both clinical and mild disruptions in mother's emotional state in early infancy.

Having said that, it should be noted that while mother's negative emotionality predicted some of the internalising, externalising and poorer social functioning of premature children, the extent of the contributions was minimal on all three outcome variables (see Figure 5). As argued in this thesis a more complex model that takes into

consideration the particular characteristics of the child is needed in order to provide a more complete understanding into the effects of prematurity on the psychosocial development of prematurely born children.

The effects of prematurity on children's ego development.

Indeed, another set of events which negatively affects premature infants psychological development appears to be the prolonged separation the infant experiences from his or her nursing mother. That is, the prediction that prolonged hospital care would negatively impact on children's ego development, regardless of mother's emotional state, was supported by the results of this research. Consistent with Eckerman and Oehler (1992) observations, the premature neonate appears to be a highly organised entity, with interpersonal capacities operating during the neonatal period. In the current study, the mean length of hospitalisation for premature infants was 81 days, which according to Object Relations theory concerning the psychological birth (Mahler, Pine & Bergman, 1975) indicates that many of these infants may have reached the symbiotic stage of psychological development during their hospital stay.

Briefly, normal symbiosis is followed by the lifting of the innate stimulus barrier that protected the newborn from internal and external stimuli in the first few weeks of extrauterine life. Symbiosis develops through the predicability of a nursing mother alleviating tensions from within such as hunger (Mahler, Pine & Bergman 1975). Therefore, the mother's availability and responsiveness to her infant, affects the formation of internal object representations that theoretically, govern much of the child's later social behaviour.

In the case of the premature infant, this developmental stage occurs under very different circumstances; in a newborn intensive care unit (NICU), and in the face of

intrusive and often stressful medical and nursing procedures (Eckerman & Oehler, 1992). Furthermore, mothers are acquainted with their infants for relatively brief periods, largely separated in time and not necessarily related to feeding or nurturing the infant (Field, 1990; Goldberg & DiVitto, 2002). Therefore, the predicability of the nursing mother alleviating tensions from within is absent for the premature infant during their hospital stay.

According to Mahler, Pine and Bergman (1975), in cases where the symbiotic process has been disturbed, the process of separation individuation, which results in coherent self-other representations, may also be delayed or disturbed. Failure to acquire adequate internal self-object representations leave their mark in the form of strong dependency needs, enmeshment and poor interpersonal functioning (Behrends & Blatt, 1985; Levine, Green & Millon, 1986; Murray, 1991). In the current study, premature children did indeed have weaker ego maturity when compared to those children who remained in proximity to their nursing mother. Poorer ego maturity resulted in premature school aged children feeling overly dependent on significant others who were also felt to be less responsive and assessable to their needs. Furthermore, the current results, which suggest that ego maturity partially mediated the relationship between mother's negative emotionality and children's poor social behaviours supports the argument presented in this thesis regarding the effects of prolonged separation on children's psychosocial development. That is, ego maturation during the hospital stay rather than simply mother's negative emotionality following the infant's discharge, would appear to play an important role in the development of premature children's adverse social functioning. These findings lend strong support to the traditional Object Relations view concerning the primacy of early social

experiences with the nursing mother in the development of ego maturity and later relational functioning.

In addition, these findings are consistent with Avery and Ryan (1988) who report that poor ego maturity is predicative of problematic social functioning in early childhood. However, there were some findings which contradicted this idea. For example, mother's depressive mood was also directly associated with the poorer social functioning of children over and above children's ego maturity. In addition, ego maturity failed to mediate the relationship between mother's negative emotional state and children's later internalising problems as anticipated. Rather, the internalising and poor social behaviours of premature children, revealed a direct association with mother's depressive mood.

A methodological explanation for this unexpected pattern of results may be that the ego measure (AORI) utilised in the current study failed to tap into the emotional problems representing depression and anxiety in children. In the present study, items representing emotional disturbances were modified or excluded from the study to ensure their applicability to children aged between 9 and 12. This may have influenced the absence of an indirect effect through ego maturity due to the lack of items tapping into emotional disturbances in children. Thus, methodological issues may have accounted for these results.

However, there could also be alternative theoretical accounts for the present study's direct link between mother's affective state and children's social and emotional development. For example, depressed mothers have been found to be less likely to establish social interactional patterns that are effective in the transformation of an infant's negative affect into positive affect (Tronick, 1989; Field, 1992). Furthermore, mothers of relatively high-risk premature infants have been shown to be

less responsive to their infant's interactional cues when compared to relatively healthy premature mother-infant dyads. That is, mothers look and smile less at their high-risk premature infants (DiVitto & Goldberg, 1979) and engage in less face to face contact (Minde, Perrotta, Marton, 1985). The origin of these interactional differences is thought to be related to the premature infant's inability to provide clear affective and behavioural cues (Field, 1979). As previously mentioned premature infants are less socially responsive and harder to soothe when compared to their full-term counterparts (Goldberg & Divitto, 2002; Minde, 2000; Field, 1979). Failure to attune to an infant's cues may lead to mother's affective withdrawal, which in turn could further inhibit a child's ability to feel positive when dealing with his or her changing social environment. From a social-learning perspective therefore, premature parents may create an environment in which their children learn poorer social skills and internalising behaviours. This in turn may lead to later poor psychosocial functioning (Mc Adams, 2001).

Consistent with previous research (e.g., Sykes et al, 1997; Schothorst and van Engeland, 1996), the hypothesis that the impaired social functioning of premature children would predict later attention problems was supported in the current study. That is the poor social functioning of prematurely born children explained 25% of the variation in attention problems. These findings imply that the poor social functioning of children, who were hospitalised for prolonged periods, may well be an indication of future attention problems that could be conceptualised as a general immaturity relating, at least partially, to ego development.

Limitations

Although the results of this study supports the contentions that the prolonged hospital care of premature infants impacts on mothers emotional state and the infants

developing ego, several limitations of the study could have accounted for some of these findings. In relation to the first aim, the current study sought to assess the impact a premature birth had on a mother's emotional well being following the discharge of her infant. However, the data is limited by retrospective self-reports of both maternal anxiety and depression, which occurred some six to fifteen years ago. Not surprisingly, retrospective recall is argued to be open to both inaccuracies and bias (Loftus, 1997). However, there are several reasons for doubting that retrospective recall introduced any serious problems in the current study. Firstly, there is evidence that mother's recall of her infant's hospital admissions and her own feelings associated with such an emotional event are generally accurate (Douglas, 1975). In particular, Cannell, Fisher and Bakker (1961, cited in Quinton & Rutter, 1976) found that prolonged hospital admissions were recalled more accurately than shorter stays.

Further limitations include the lack of a direct measurement concerning the duration of maternal clinical and sub-clinical depressive symptoms. While both previous research and the current study suggests that premature children are more susceptible to mother's negative mood, variations in type, severity, and length of negative emotionality may also play an important role in later childhood functioning (Poehlmann & Fiese, 2001; NICHD, 1999). The criterion for severity of depressive symptoms, chosen somewhat arbitrarily in the current study, failed to measure the duration of premature mothers' negative mood. That is, length of maternal depression has been shown to be a stronger predictor of premature children's current behavioural functioning rather than feelings of depression per se (NICHD, 1999). Future research may benefit by measuring duration of depressive mood and how that impacts on childhood development.

The overall suggestion that it is prolonged hospital care that negatively impacts on premature children's psychological development warrants careful scrutiny. Although, as suggested by this study, prolonged hospital care is linked to later behavioural disturbances in premature children the current study did not measure ongoing family discord, a variable often associated with later adverse behaviours in adolescence (Minde, 2000; Quinton & Rutter, 1976). Secondly, it is also possible that the current results may be confounded by repeated admissions following the initial discharge of premature infants. Within the current sample of premature children who completed the ego maturity measure, 18% were readmitted into hospital on one occasion in the following two years. In addition, a further 7% (i.e. 3 children) experienced repeated admissions following their initial discharge. Douglas (1975), and Quinton, and Rutter (1976) examined the behavioural outcome of children who experienced repeated admissions during the first year of life. Both studies concluded that a single hospital admission lasting one week or less is of little importance in the genesis of behavioural or emotional disturbance in later childhood. However, repeated admissions were associated with a significant increase in emotional and behavioural problems in later childhood. Douglas (1975) argued that repeated admissions were of causal importance in the genesis of adverse behavioural functioning in later childhood. Unfortunately, due to sample size, the current study was unable to test this hypothesis.

A higher proportion of psychosocial problems in the premature group could also be confounded by birthweight. That is, prolonged hospital care showed a substantial negative correlation with low body weight. Indeed the sample of premature children in the current study approximated a sample of extremely low birth weight children (see, Table 1). For these infants, the incidence of abnormalities in

physical and neurological development is much greater (Minde, 2000) and could account for the current findings. Future research should investigate samples of premature children of all birthweights before the origins of behaviour problems reported in this paper can be more fully understood.

Furthermore, the greater incidence of behavioural and social problems in premature children could well be attributed to the recruitment of participants in this study. While the investigator made every effort to obtain a representative sample of premature children, the use of an online methodology may have introduced several biases into the sampling process. In particular, Internet forums may be expected to attract parents whose children are experiencing greater behavioural problems than those expected in the general population of premature children. Further, the title of the questionnaire “the effects of prematurity on the social and emotional development of premature children” may have attracted a higher proportion of parents who identify their children with having social and emotional disturbances. Taken together, these problems underscore the need for further replication of the current findings before any generalisations can be made to the wider population of premature children and their families.

Implications and Future Research

Despite the limitations of this research, the findings consistently underscore the need to understand premature children and their mothers in their own right and not just in reference to healthy full-term infants and their parents. Firstly, mother’s emotional state following the birth of a premature infant needs to be understood within the context of some basic psychological parameters linked to the internal aspects of maternal bonding. From a psychoanalytical point of view, primary maternal preoccupations refers to the mother’s mental life during the immediate post-birth

period, which contribute to the formation of a selective and enduring bond, critical to maternal responsiveness. Indeed the current findings that prolonged separation together with anxiety leads to depression in mothers of premature children supports the assumptions of primary maternal preoccupations in the early post-natal period.

Rather than relying on normative measures of post-natal depression derived from clinical populations, clinicians dealing with premature mothers may need to determine a mother's capability of entering the relational bond with her infant following prolonged separation. Assessment of maternal anxiety may be a useful starting point along with measures tapping depressive mood. If a premature mother reports an abnormal amount of caring anxiety or depression (including sub-clinical depressive mood) these symptoms would need to be taken seriously and clinicians would be well advised to monitor and intervene where possible. A goal of intervention during the Newborn Intensive Care Unit (NICU) stay may be to enhance the mother's thoughts of her infant by promoting frequent skin to skin contact with her infant and providing consistent opportunities for parents to be involved in their infant's care. Mothers who rapidly engage themselves with their premature infant in the hospital nursery have been shown to be more sensitive to their infants needs (Minde, 2000) and are less likely to experience feelings of grief and loss following discharge (Goldberg & DiVitto, 2002).

As well as considering the role of maternal anxiety and depression in the NICU environment, the results of the current study also suggest that these emotional responses may not be immediately reversible following the discharge of the infant. In the process of meeting the needs of the premature infant, who is often described as fragile and easily disorganised (Field, 1979), the mother may feel 'out of tune' with her infant, and may not have at her disposal an affective or behavioural response that

complements her infant's development. In addition, premature mothers often experience feelings of guilt, anger and despair having given birth to a premature infant and often have difficulty obtaining and comprehending information about her infant (Minde, 1984). Taken together these points suggest that clinicians need to be particularly sensitive to the difficulties premature mothers may have in expressing their fears and anxieties concerning both their own well being and their infants functioning.

A further important theme of the current investigation is the findings that premature infants, who were hospitalised for prolonged periods, were adversely affected by this experience regardless of their mother's emotional state. Indeed, it appears that the hospital environment, which demands that an infant cope predominantly in the absence of the nursing mother by its very nature, fails to foster healthy ego development.

Fortunately, a great body of literature over the past 15 years has recognised the importance of early psychological development in premature infants and hospital practices have shifted towards encouraging parents to participate in the care of their infants (Goldberg & DiVitto, 2002; Minde, 200). Arguably, the most dramatic change in caring for these special infants evolved from research demonstrating the benefits of 'kangaroo care' whereby a mother carries her infant in an upright position on her chest in a sling. The advantages of kangaroo care are best illustrated in developing countries such as Colombia where due to economic constraints, and lack of incubators, premature infants in satisfactory conditions, no matter how small, go directly to their mother as early as two hours following birth (Anderson, Marks & Wahlberg, 1986).

Research that has documented the outcome of these premature infants report dramatic reductions in mortality and parental abandonment when compared to those infants who were separated for prolonged periods from their primary caregiver (Anderson, Marks & Wahlberg, 1986). Reflecting on mother-infant proximity, Anderson et al. noted that skin to skin contact, nurturance and warmth seem to provide the ideal environment for premature infants. These findings led others (Eckerman & Oehler 1992; Field, 1990) to conclude that kangaroo care may also enhance parental confidence that leads to maternal responsiveness and subsequent bonding. The challenge to Western medical technology is to find the correct balance between providing the benefits of modern medical interventions while simultaneously supporting the developing parent-infant relationship pertinent to maternal investment and subsequent infant ego development.

While hospitals now encourage parents to participate in kangaroo care, there is still a need to further promote these practices in Western NICU institutions. As mentioned previously, medical procedures alone still account for the majority of social and physical contact a premature infant endures whereas mothers account for a mere 14 percent (Eyler, Woods, Behnke & Conlon, 1992 cited in Goldberg & Divitto, 2002). These data requires us to think of new ways of empowering parents to participate in the care of their infants and participate in kangaroo care. Perhaps interventions that include an educational component concerning the benefits of such practices like kangaroo care may be a useful starting point. A particularly interesting question for future research is whether the right balance of kangaroo care can moderate the effects of prolonged separation on ego development and or primary maternal preoccupations.

Of further relevance, the current path model that begins with prolonged hospital care and ends in behavioural disturbances may well apply to children who have undergone prolonged hospital admissions in early infancy for reasons other than prematurity. As already noted, children who have undergone medical procedures in early infancy that required prolonged hospitalisation are twice as likely to develop an emotional or behavioural deficit in early childhood (Minde, 2000). As Minde suggests our current knowledge about attachment, indicates that the behavioural and emotional disturbances experienced by both premature and non-premature hospitalised infants in later childhood may well be due to the disruption of the infant's developing attachment to his or her primary caregiver. Like premature infants, hospitalised infants often have to cope with numerous medical staff each day (Minde, 2000) and although hospitals now engage in attentive nursing care, nursing care is not an approximation of parental care (Minde, 2000; Goldberg & Di Vitto, 2002).

Finally, the current model revealed a direct pathway, suggesting that the weaker ego maturity of children, hospitalised for prolonged periods, leads to poor social functioning, which in turn explained 25% of the variation in attention difficulties. Overall, these findings could be taken to suggest that premature children are more likely to suffer with Attention Deficit Hyperactivity Disorder (ADHD). This interpretation is consistent with much outcome literature which document similar findings (e.g. Hack, Breslau, Aram, Weissmen, Klein & Borawski-Clark, 1992; Breslau, Brown, DelDotto, Kumar, Ezhuthachan, Andreski & Hufnagle, 1996; Szatmari, Saigal, Rosenbaum & Campbell, 1993).

In fact Szatmari et al. (1993), have stated that the behaviour problems of premature children may represent a relatively pure form of ADHD, a claim supported

by many other investigators (e.g., Hack, Breslau, Aram, Weissman, Klein & Borawski-Clark, 1992; McCormick, Gortmaker & Sobol, 1990).

However, this thesis cautions against labelling the attention problems of premature children with a diagnosis such as ADHD. Instead, the behaviours constituting the attention factor on the Child Behaviour Checklist (e.g. acts young, cant concentrate, confused, stares) could be conceptualised as a failure to achieve certain age appropriate goals; this conceptualisation raises the question of why this may have occurred. Rather than taking a diagnostic perspective, this thesis suggests that clinicians dealing with premature children may need to take a developmental approach that involves viewing the observed behaviours as possible deficits stemming from earlier developmental delays. Assessment of the premature child's ability to involve him or herself in interpersonal relationship would be a useful starting point in clarifying the nature of behaviours otherwise assumed to reflect ADHD. In addition, the current results imply that a premature child may feel overly dependent on others but at the same time feel that others are less likely to respond or be assessable to their needs. Since it is these characteristics that have found in premature children, this thesis argues that closer attention to the development of social maturity (i.e., ego development) seems warranted.

Conclusion

Overall, the results of this study support the assumptions of the transactional model (Sameroff & Chandler, 1975), in that they emphasise the need to understand the complexity of mutual influences that operate between the premature infant and his or her primary caregiver that together may serve to either moderate or perpetuate the effects of earlier developmental delays; namely, bonding. In particular, the current study underscores the need to examine the attachment relationship from the mother-to-child rather than simply from child-to-mother. Indeed the integration of psychoanalytical thought has been advocated by Bowlby (1958) himself as the ultimate road to understanding the attachment process and has been shown in this study as a useful way of understanding premature mother-infant bonding.

According to this framework, the length of a premature infant's hospitalisation has serious implications for the mother's developing tie to her infant. That is, prolonged separation of premature infants from their mothers has been shown to result in mothers experiencing greater anxiety and this appears to develop into depressive mood. This emotional state was shown to persist following the discharge of premature infants and was predicative of later adverse childhood functioning.

Still another set of events that affect a premature infant's development may also be the infants limited capacity to enter the symbiotic phase of development pertinent to ego development during their hospital stay and possibly beyond. Evidence for this assumption was found in that premature school aged children in the current study reported weaker ego maturation, regardless of their mother's emotionality, when compared to those children who remained in proximity to the nursing mother. Moreover, weaker ego maturity appears to lead to poorer social behaviours characterised by feelings of dependency, loneliness and difficulties engaging in

interpersonal relationships. Not surprisingly, the poor social functioning of premature children led to attention problems resembling relative immaturity, and the inability to focus.

Both Object Relations theory and Winnicott's (1956) psychoanalytical account of the mothers mental life following birth, state that this period is characterised by a unique mental and developmental repertoire that is directed at maintaining mother-infant physical and psychological proximity crucial to bonding and subsequent development. Although the current study sought to understand the process of premature children's development from a psychoanalytical angle, this approach is not intended to pathologise this group. Rather, this study highlights compelling reasons that may explain why premature infants and their mothers bring different elements to early social interaction patterns that in turn may lead to adverse child development.

That is, the results of this study should be taken as a framework that outlines the psychological processes influencing a premature child's early years of development that is not comparable to those already outlined for full-term infants. Given this understanding, clinicians dealing with premature mother-infant dyads can implement preventative strategies that support the development of internal bonding processes operative for both premature mothers and their premature infants. While modern medical technology continues to improve the survival rate of premature infants, our knowledge concerning the importance of bonding can only serve to improve the healthy development and well being of these very special infants.

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