THE ROLE OF HOME VISITING AS AN EARLY INTERVENTION STRATEGY FOR PREVENTION OF CHILD ABUSE AND NEGLECT

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Abstract

Burgeoning numbers of child abuse and neglect reports throughout the developed world has prompted calls for preventive and early intervention measures to support and prepare families for parenting. Nurse home visiting is one form of service delivery gaining acceptance as an appropriate strategy. Although home visiting is not a new concept in service delivery, enthusiasm for home-visitation programmes has re-emerged not only in Australia in recent years, but in many other developed countries with initiatives being launched or recommended at state, national and international levels. This thesis presents a review of the tenets of home visiting and examines a home visiting intervention programme targeting children born into families with child abuse or neglect risk factors.

A randomised controlled trial using a cohort of 181 families was undertaken to evaluate the impact of this home visiting programme. Mothers were recruited in the immediate postnatal period and allocated either into the home visiting programme or into a comparison group. The research design required self-identification into the study by providing positive responses to a range of risk factors. This procedure was shown to have utility in the context of recruitment to a research trial, in that respondents were willing to disclose sensitive personal issues using this form of screening as the basis for targeted intervention. The home visiting programme examined by this study was also shown to have social validity, with mothers willing to accept this form of intervention from the immediate postnatal period. High retention and satisfaction rates strengthened this conclusion.

The ability of this study to evaluate the effectiveness of the home visiting intervention programme may have been compromised by a range of contextual factors influencing programme outcomes detailed in this thesis. Nonetheless, the study found that, for a group of families reporting risk factors for child abuse and neglect potential, provision of an intensive home visiting intervention using nurses, social workers, and parent aides was not effective in producing more favourable adjustment to the parenting role over time compared with nonintervention or clinic based service provision. The intervention programme group participants gained knowledge of child development and child management skills during the early
postnatal weeks while the comparison group participants developed knowledge and skills later in the first year of their infant’s life. Early adaptation to the parenting role, parenting knowledge, and skill acquisition bodes well for parent-infant attachment and the children’s long-term health and developmental outcomes. However, a 12-month assessment of maternal, family, and child development variables did not demonstrate maintenance of a positive intervention impact on parenting stress, parenting competence, or quality of the home environment.

Finally, predictive analysis of factors measured in the immediate postnatal period revealed an absence of any predictive value to demographic characteristics, which secondary prevention efforts typically target. These results not only demonstrate that there is a relationship between maternal, family and environmental factors identified in the immediate postnatal period, and adjustment to the parenting role, but also challenge demographic targeting for child abuse and neglect risk. Findings are discussed and placed within the context of previous research and reference is made to implications for future child health practice, development, and research. Recommendations arising from this discussion relate to both future research and community child health practice.
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CHAPTER 1

Introduction and Review of the Literature

Introduction and Aims

Throughout the developed world, improved nutrition, immunisation, and child health management have advanced the prevention of childhood illness and reduced infant mortality and morbidity. However, the pernicious effects of child abuse and neglect continue to impose a heavy burden on contemporary societies. Factors associated with child abuse and neglect have been the focus of a growing body of empirical research since the early 1960’s. A corresponding range of endeavours to prevent the abuse and neglect of children has been implemented, yet the number of reports of abused and neglected children made to welfare authorities throughout Australia (Australian Institute of Health and Welfare (AIHW), 1995), the United States (United States General Accounting Office, 1992), and the United Kingdom (Department of Health, 1995), continue to rise.

There is uncertainty about the impetus for these increasing numbers of reports. For instance, variations to procedures and statutory requirements throughout Australia over the past decade have increased the number of cases brought to the attention of authorities. Moreover, there is greater recognition by the public and health professionals of child maltreatment. Notwithstanding these changes, it is widely acknowledged that the number of substantiated cases of child maltreatment significantly under represents the extent of its genuine prevalence.

Efforts to address child abuse and neglect range from prevention programmes and treatment programmes, to out-of-home care services for children removed from dangerous environments. However, as reports of child abuse and neglect burgeon, the limitations of current treatments for abusive parents and their children are more widely acknowledged. This has prompted an interest in the effectiveness of programmes that aim to prevent child abuse and neglect. Prevention programmes are valued not just for their potential to avoid human suffering, but to reduce need for the wide range of services required to address the consequences of child abuse and neglect (James, 1994).
Preventive interventions for child abuse and neglect are frequently grouped according to classifications used in preventive medicine (Caplan, 1964). These are termed primary, secondary, and tertiary intervention strategies. Primary prevention programmes aim to reach the wider community by raising public awareness and using widespread campaigns. Secondary efforts include programmes applied to particular populations identified as being at increased risk of experiencing child abuse or neglect. Tertiary prevention involves treatment of abusive parents and their children, with the aim of preventing further and recurrent abuse.

Alternatively, prevention efforts can be defined according to their target population (Mrazek & Haggerty, 1994; Gordon, 1983). Using strategies for intervention that operate at a community level offering support to all new families before or soon after the birth of a child is universal prevention. An example is a home visiting service provided to all families after the birth of a newborn aiming to enhance parental competence and provide parental education. Secondly, families can be screened to identify risk for child abuse and neglect. This strategy for prevention, indicated prevention, is useful when resources are scarce. High-risk families are identified and given priority for intervention programmes. Finally, selected prevention programmes target families where child abuse or neglect is considered to be more likely to occur due to membership of a particular community.

Notwithstanding these classifications, the approach used by child protection services is usually to operate at different levels of prevention. This is due to the complexity of personal and social systems factors that predispose families to intrafamilial violence (Browne & Herbert, 1997) and the scarcity of resources available to service providers.

Families with particular characteristics face increased challenges in raising their children (Browne & Herbert, 1997), and early intervention and prevention programmes reflect concern that child abuse and neglect are more about parents’ capacity for parenting than individual psychopathology (Wolfe, 1993). Their focus is concentrated towards the parent-child relationship and the way in which the parent responds to behavioural and emotional development of the child. Unfortunately, families most in need of support are often those least likely to access community

Prevention programmes for child abuse and neglect vary widely in their approach. For instance, programmes may target populations for their situational, familial, or individual characteristics. Frequently a combination of these factors is used, since the factors influencing parenting dysfunction are complex. Many programmes involve home-based intervention and increasing attention has been paid to the evaluation of home visiting programmes. In 1996, the Department of Health and Family Services (Vimpani, Frederico, & Barclay, 1996) commissioned an audit of Australian home visitor programmes with support from the National Child Protection Council. The report highlighted that interpretation of the literature in this area was difficult because the targeted populations, content, and purpose of programmes varied so widely (Vimpani et al.).

Throughout the literature, evidence supports a strong relationship between child abuse and neglect, and poor developmental outcomes for children. Studies supporting the view that parents and the home environment are critical determinants of childhood development, early educational preparation, and indeed attainment throughout the school years (Bronfenbrenner, 1979) have prompted clinical researchers to examine more closely the way in which parental behaviours can be influenced, and the home environment improved. Furthermore, a growing body of evidence indicates that very early parent-child interactions impact on developmental outcomes (Murray, 1992; Rogosch, Cicchetti, & Aber, 1995; Sharp et al., 1995; Wolfe, Wekerle, & McGee, 1992). Consequently, the parent-child relationship is an appropriate focus for intervention.

The content of home visiting interventions varies between programmes, as do the frequency and duration of visits. It is often recommended that programmes commence in the antenatal or immediate postnatal period (Leventhal, 1996; Olds, Henderson, Chamberlin, & Tatelbaum, 1986a), as the perinatal period presents an opportunity for early intervention programmes to influence the parent-child relationship (Brazelton & Cramer, 1990). It is also a time for acknowledging families’
needs for parenting support. In particular, it is a time to recognise family strengths, the underlying commitment to the child, and the potential skills of parents.

There is much to be learned about the potential for home visiting in child abuse prevention. Despite equivocal findings of its effectiveness, there is a common perception that the creation of a secure empathic relationship with the family during home visiting will result in improved self-efficacy, mood, and adaptation to the parenting role.

In summary, increasing concern for the protection of children from child abuse and neglect has provided the impetus for child health services to consider targeted, early intervention strategies. This trend has been accompanied by a desire to identify measurable outcomes for child health practice and to plan services according to evidence for their efficacy. Home visiting is one approach recently receiving much attention. As a strategy, it is noted for its ability to strengthen and improve the family environment into which children are born.

The aim of this thesis is to present an evaluation of the effectiveness of a home visiting programme. The programme targeted families with particular characteristics predictive of child abuse and neglect in the immediate postnatal period. The ability of home visiting strategies to buffer stress related to the parenting role and provide better parenting environments for young children has not been adequately addressed by researchers (Vimpani et al., 1996). Thus, the influence of this home visiting programme on maternal adaptation to the parenting role, parent-child interaction, provision of a nurturant home environment, and preventive health behaviours of parents for their children will be examined. A range of maternal adjustment, and child development outcomes will be used to compare intervention parents and children during the first year of the child’s life with comparison families.

Through an ecological framework that recognises multiple interacting systems impacting upon the developing child (Belsky, 1980; Bronfenbrenner, 1979; Garbarino, 1992), the importance of the parent-child relationship will be emphasised. The effectiveness of home visiting, employed as a strategy to prevent child abuse and neglect through early family support, will first be explored by way of a review of the large number of studies evaluating home visiting programmes worldwide.
Before introducing this study, it is important to place the prevention of child abuse and neglect into context by initially defining the problem and considering its prevalence. In addition, risk factors increasing the likelihood of child abuse and neglect will be reviewed and protective factors or the circumstances that buffer the effects of risk factors will be discussed. From this literature will emerge an understanding of the importance of looking both within the family at individuals and their interactions as well as beyond that system to provide an understanding of the impact these systems have on adaptation to the parenting role. Set against this background, implications for early intervention will then be reviewed.

**Incidence and Prevalence of Child Abuse and Neglect**

One of the earliest and most influential papers defining the problem of child abuse and neglect was published over three decades ago. Kempe, Silverman, Steele, Droegemuller, and Silver (1962) described the Battered Child Syndrome at a time when other writers had begun to recognise child abuse and neglect as a social phenomenon and public health issue. The categories of neglect, physical injury, sexual abuse, and emotional abuse have since been used for the purposes of child abuse notification, substantiation of child abuse cases, and prosecution. The AIHW (1998) uses the following definitions of child abuse and neglect as criteria to establish child abuse and neglect data within Australia:

- Physical abuse - any non-accidental physical injury inflicted on the child;
- Emotional abuse - any act which results in the child suffering any kind of significant emotional deprivation or trauma;
- Sexual abuse - any act which exposes a child to, or involves a child in, sexual process beyond his or her understanding or contrary to accepted community standards; and
- Neglect - any serious omissions or commissions which, within the bounds of cultural tradition, constitute a failure to provide conditions that are essential for the healthy physical and emotional development of a child. This includes failure to thrive. (pp. 8-9)
Notwithstanding acceptance of these general definitions throughout Australia, there are variations between States and Territories as to what constitutes child abuse and neglect. Each State and Territory of Australia has separate legislation to empower it to undertake responsibilities for the protection of children from abuse and neglect.

Variations in the definitions of child abuse and neglect and reporting practices are also apparent between countries. Although this may appear to limit the reliability of comparing statistics, it should be noted that variations in the rates of child homicide closely parallel variations in reported cases of child abuse, and provide some validation of the latter (Browne & Herbert, 1997). Thus, the comparison of rates of child abuse and neglect between countries is supported. As we shall see, the four categories of child abuse and neglect also vary according to the psychological, sociological, or ecological models used to define them (Vimpani et al., 1996). A more detailed discussion of the problem of defining types of child abuse and neglect will follow the overview of the incidence of child abuse and neglect, and will highlight the extent of the problem.

Deaths and injury caused through motor vehicle traffic accidents, accidental poisoning, falls, or drowning are frequently the target for public health campaigns and community concern. In comparison, during the first twelve months of life, infant death by homicide equals or exceeds the number of infant deaths caused by these public health concerns in Australia (Strang, 1996). Consistently, it appears that child abuse and neglect feature among the most common causes of death to young children in Australia, Britain and the United States (Browne & Herbert, 1997).

Differences occur among the types of abuse and neglect reported as well as their severity. Individual cases can present with a range of injuries (AIHW, 1998). Data collected by the Australian Institute of Criminology suggest that infants up to twelve months old are more often the victims of direct physical attacks, in contrast to older children who are more likely to be killed in family disputes that feature weapons (Strang, 1996).

It is estimated that in the United States, 47 children in every 1,000 under 18 years are reported as victims of child abuse and neglect (Wang & Daro, 1998).
Moreover, a 41% increase in child abuse reporting levels during the past decade is featured in this data. During 1997, over one million reports of child abuse and neglect were confirmed in that country representing a rate of 15 per 1,000 children. Figures established by Child Protection Registers in England suggest lower rates of child abuse in Europe, ranging from 1 in 1,000 children in Scandinavian countries to 4 in 1,000 children in the United Kingdom (Browne & Herbert, 1997).

Australia has an estimated child abuse and neglect incidence rate of 5.8 per 1,000 children in the zero to sixteen years age group (AIHW, 1998). During the 1995 to 1996 year period, 28% (n = 8,467) of substantiated notifications were for physical abuse, 31% (n = 9,265) for emotional abuse, 16% (n = 4,802) for sexual abuse and 25% (n = 7,299) for neglect. Child abuse and neglect notifications are substantiated when “in the professional opinion of the officers concerned, there is reasonable cause to believe that the child has been, is being or is likely to be abused or neglected” (AIHW, 1998, p. 8). The number of substantiated cases recorded by the State and Territory community service departments increased from 18,816 between 1988 and 1989, to 30,615 between 1994 and 1995. However, in the next period of measurement 1995 to 1996, the number of substantiated cases reduced by 3% to 29,833.

The AIHW (1998) claims that this recent stability of substantiated case numbers (in contrast to the notable rise within previous periods of measurement) reflects the development of child protection policy and practice, rather than any real reduction in child abuse and neglect. Their argument is based upon theoretical debate, economic considerations and efficiency measures which have led to policy changes in child protection policy and practice throughout Australia during the past decade (AIHW, 1998). For instance, significant harm to the child rather than a single action now leads to substantiation, reducing the substantiation rate in most States. Furthermore, reports of child concerns are excluded. Since implementing these changes, the numbers of substantiated cases have remained consistent despite an overwhelming rise in notifications.

During the past decade there has been an average increase in the number of notifications of child abuse and neglect of approximately 15% per year (Vimpani et
al., 1996). In the 1995 to 1996 period, 16.3 in 1,000 children aged zero to 16 years were subjects of a child abuse and neglect notification, whereas 5.8 in 1,000 were the subject of a substantiated report. The growing number of notifications has resulted from a combination of mandatory reporting guidelines and a rise in public awareness of child abuse and neglect (AIHW, 1995). This trend may also be due to a number of other factors such as increasing prevalence over time, and less tolerance by the community for acts of child abuse and neglect. In Australia, notifications of child abuse and neglect come from a number of different sources. Australian States and Territories, with the exception of Western Australia, currently have legislation requiring the compulsory reporting of child abuse and neglect to community services departments (Western Australia relies on guidelines and protocols for a number of groups of clinicians and other professional people to report abuse and neglect). As well as mandatory reports, other sources of notifications of child abuse and neglect include the child victim, a parent or guardian, other relatives, friends or neighbours (AIHW, 1998).

Interestingly, the AIHW’s (1998) most recent data show the likelihood of notification for child abuse and neglect leading to substantiation varies considerably by the source of report. A relatively high proportion of notifications from the subject of abuse and neglect, police, social workers and school personnel are substantiated. Conversely, notifications from anonymous callers, friends, neighbours and other relatives are least likely to be substantiated (AIHW, 1998). It is possible that these figures reflect model assessment by professionals of children and their families as high or low risk for child abuse and neglect. Researchers including Daro, Migley, Wiese, and Salmon-Cox, (1996) argue that substantiated cases of child abuse and neglect still represent only a small proportion of the actual numbers of maltreated children.

The overall picture of the incidence of child abuse and neglect in Australia appears to be similar to other developed countries. There is no single factor that can be ascribed to the increased reporting and identification of child abuse and neglect throughout the developed world. A number of factors are responsible to some extent,
such as wider recognition of the problem of child abuse and neglect, along with heightened awareness of children’s rights and their need for protection.

Importantly, a comprehensive understanding of increased reporting and identification of child maltreatment requires examination of factors at individual, family, cultural, social and political levels. To compare international data on the incidence of child abuse and neglect Daro et al., (1996, p. 11), comment that the “Philosophical notions of family privacy, the inherent rights of children and the capacity of government to manage these cases” appear to be determinants of the extent to which behaviours are perceived as harmful to children. Also, Daro et al., found that in some countries, the right of the individual family to determine how best to care for children is respected to the extent that child abuse and neglect notification policy and practice is precluded. As an example of the impact of the capacity of governments to respond to child protection, Daro et al., turn their attention to developing countries. Some developing countries feature high numbers of homeless or abandoned children, and the absence, or inadequacy, of social service delivery systems impedes the ability of relevant authorities to respond consistently to notifications. When the problem of child abuse and neglect is viewed from these wider cultural and political perspectives, it becomes apparent that definitional issues play a key role in determining the level of responsibility societies will embrace to protect children. Efforts to accurately determine the incidence and prevalence of child abuse and neglect are also complicated by problems in defining child abuse and neglect.

**Defining Child Abuse and Neglect**

Child abuse has been described as “an ambiguous and elusive construct that defies precise explication” (Ammerman & Hersen, 1990, p. 7) and researchers seeking to develop an operational definition of what constitutes child abuse and neglect can be frustrated in their efforts. Increasingly, researchers and clinicians alike recognise the need to integrate divergent perspectives on child abuse and neglect so that interventions may be applied and evaluated.

Child abuse and neglect are essentially social constructs based on two concepts: the first concept being harm to a child, and the second concept being
responsibility for that harm (Daro et al., 1996). It is the way in which these two dimensions fluctuate within and between societies that inhibits a universal response to child abuse and neglect. For example, within the context of the law, physical evidence of child abuse and neglect may be emphasised to determine its existence. Conversely, when harm to the child is measured by the degree to which child development is disrupted, the scope of child abuse and neglect extends to include a range of dysfunctional caregiving behaviours (Wolfe et al., 1992). Early biomedical definitions of child abuse and neglect developed from attempts to encompass physical injuries and severe cases of neglect. The diagnosis of Battered Child Syndrome (Kempe et al., 1962) for example helped to identify cases of child abuse through objective evidence presenting to clinicians such as burns, fractures, and bruises. Cases of neglect could be diagnosed by identification of failure to thrive, poor hygiene, or death. In comparison, contemporary notions of child abuse and neglect view such objective evidence of abuse and neglect as secondary to more pervasive dysfunctional parenting behaviour. Thus, parental adjustment is now a central dimension to the medical-diagnostic definition (Ammerman & Hersen, 1990).

In contrast to this parental adjustment focus, the environmental context within which child abuse and neglect occurs is emphasised in the ecological approach (Belsky, 1980). Moreover, a conceptual definition derived from the developmental psychopathology perspective recognises that the parent, child, and environment transact over time (Cicchetti & Toth, 1995). Parenting behaviours that interfere with or arrest the emergence and unfolding of language, cognitive, motor, and social skills, define these perspectives of child abuse and neglect. Because these are necessary skills for children’s educational and social progress in contemporary society (Najman, Bor, Morrison, & Williams, 1992), the scope of child abuse and neglect becomes even more extensive as research reveals the impact of child abuse and neglect on children’s development.

As previously noted, the way in which child abuse and neglect are defined parallels the ways in which communities respond. Wider definitions of child abuse and neglect appear to be strongly supported. The burgeoning number of notifications throughout Australia, the United States, and the United Kingdom provide evidence
for this support. In response to the growing number of reports of child abuse and neglect, those involved with child protection are prompted to draw upon a range of data to argue for distinguishing levels of maltreatment (Emery & Laumann-Billings, 1998). The ability to differentiate between levels of abuse is appealing, particularly for purposes of intervention planning.

Advocates for family support interventions claim that distinctions can be made between those families that require supportive interventions and those where adversary or coercive interventions are necessary (Emery & Laumann-Billings, 1998; Wolfe et al., 1992). Emery and Laumann-Billings (1998) argue that because child abuse and neglect most often occurs within an environment of socioeconomic stress, community violence, domestic violence, and social isolation, discrimination between minimal harm and serious harm needs to be undertaken in order to support families reported to child protection authorities.

However, more research evidence is necessary and increasing efforts to move away from forensic investigation models of child protection towards a system of family support are met with caution (Tomison, 1996a). Firstly, where a comprehensive assessment of the family and the overall context within which alleged abuse has occurred reveals the need for family support, adequate resources are needed to provide supportive services. Where resources are scarce, families may be left feeling alienated and frustrated by a system identifying them as abusive, but unable to provide appropriate support or assistance (Scott, 1997). Secondly, incidence rates of child abuse and neglect may be reduced by definition rather than by reduction in its prevalence using a family support model for substantiating child abuse and neglect. Tomison (1996a) argues that this could result in reduced levels of government funding for child protection services. Further concerns relate to the emphasis on family support, which may be viewed as a shift towards involvement with the family at the expense of children’s safety.

Child abuse and neglect, then, refers to a wide range of behaviours. Child abuse and neglect includes acts of commission related to physical, sexual, emotional, or psychological harm to children, as well as acts of omission related to physical and emotional neglect (Giovannoni & Becerra, 1979). Moreover, the continuum of child
abuse ranges from “visible, distinct actions towards a child that exceed a community standard... to the everyday experiences of a child that are unhealthy or inappropriate for his or her psychological growth and development” (Wolfe, 1993, p. 157). To further understand the impact of child abuse and neglect along this continuum, an overview of consequences of abuse and neglect is necessary.

Consequences of Child Abuse and Neglect

The complexity in defining parameters of child abuse and neglect has developed principally from an emerging awareness of its consequences. There is a significant amount of literature on both immediate and long-term outcomes for victims of child abuse and neglect. Importantly, issues of definition have guided this research and, consequently, two primary areas of investigation have emerged. These areas are the immediate: medical outcomes and physical trauma; and longer term: psychological, social, and emotional consequences of abuse. Firstly, case studies related to medical outcomes and physical trauma of child abuse and neglect have served to highlight the substantial effects of physical abuse, sexual abuse, and neglect. However, research in the areas of child injury, and abuse and neglect is notably diverse and fragmented. Recently a number of authors have identified the need to draw this literature together in an attempt to provide a more integrated approach to child injury management (Herrenkohl, 1990; Peterson & Brown, 1994). Fragmentation and diversity of the literature needs to be addressed because the importance of related medical literature lies in its contribution to accurate diagnoses of childhood injury.

Secondly, demonstration of longer term psychological, social and emotional consequences of child abuse and neglect has led to a greater emphasis on more subtle and pervasive psychological injuries imposed as a result of maltreatment by caregivers (Wolfe, 1995). Furthermore, disturbances such as insecure attachment formation, depression, anxiety, conduct disorders, poor peer relations, academic underachievement, and intellectual deficits have been demonstrated in a number of distinct studies (Ammerman & Hersen, 1990). Such findings have broadened the scope of inquiry into the consequences of abuse during the past two decades (Aber & Cicchetti, 1984; Cicchetti & Rizley, 1981).
Recent studies have investigated the relationship between the context of abuse and developmental outcomes (Manley, Cicchetti, & Barnett, 1994; Wolfe & McGee, 1994). Specifically, severity of maltreatment, interaction between severity and frequency of maltreatment and frequency of child abuse notification were significant predictors of child functioning in the Manley et al., study. Similarly, Wolfe and McGee (1994) tested the relationship between underlying dimensions of child abuse and neglect and adjustment in adolescence. Interestingly, differences were shown among adolescents with a history of child abuse for the developmental period within which maltreatment occurred, the type of maltreatment experienced, and gender. For adolescent boys, the relationship between early maltreatment and adjustment was strengthened by interactions between the variables physical and psychological abuse, as well as between partner abuse and neglect. On the other hand, the developmental period during which females were maltreated was significantly related to their current adjustment. Such concise depictions of the consequences of child abuse and neglect provide the basis for a more comprehensive understanding of developmental consequences of child abuse and neglect.

Although neither physical child abuse nor neglect lead to any specific trajectory (Cicchetti & Toth, 1995), children maltreated as infants are more likely to experience developmental problems in later years (Egeland, Sroufe, & Erickson, 1983). The view that functioning in infancy and toddlerhood is grounded in the security of parent-infant attachment is well supported by the contribution of attachment theory to child abuse and neglect research (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1951, 1969, 1988).

The focus of research on the developmental effects of child abuse and neglect typically integrates the theories of human attachment (Ainsworth et al., 1978; Bowlby, 1969, 1988), and social learning (Bandura, 1977a), into an ecological framework of child development. Developmental problems among maltreated infants and toddlers appear to relate to poor nurturance by caregivers, as well as to the way in which the child adapts to the environment over time (Wolfe et al., 1992). These two themes of parent-infant attachment and adaptation to the environment dominate the literature on effects of maltreatment on children’s development. Viewed within
the context of an ecological framework, the literature on human attachment and social learning models will now be reviewed to elicit how each is applied to an understanding of consequences of child abuse and neglect.

Variations occur in developmental outcomes for children who are maltreated in infancy due to a variety of risk and protective factors operating within the individual and the environment within which the abuse occurs (Rutter, 1990). The way in which individual, family, and broader social variables influence the parent-child relationship is central to understanding the consequences of maltreatment. Consequently, an ecological approach has been the most influential framework within which the definition, development, and course of child abuse and neglect have been considered during the past two decades. Leading theories integrating individual, family, community, cultural and political perspectives have drawn on Bronfenbrenner’s (1979) theoretical contribution to the study of the ecology of human development. Belsky (1980, 1993), Garbarino (1992), and Cicchetti and Toth (1995) have each used the interconnecting systems of Bronfenbrenner’s ecological framework to develop integrated models of child maltreatment. The characteristics of these systems have shaped and influenced research on consequences of, and multiple risks for, child abuse and neglect.

Young children are at risk for insecure attachment with abusive and neglectful parents (Egeland, Sroufe, & Erickson, 1983). Secure attachment depends upon the child having confidence in the parent’s availability for them, responsiveness to their needs, and helpfulness in adverse or frightening situations (Bowlby, 1988, p. 124). Hence, secure attachment relies upon the parent (or parent figure) being readily available, sensitive to the infant’s behaviours, and responsive to their need for protection and comfort. Furthermore, attachment tends to be self-perpetuating since the secure child is happier, less demanding, and more rewarding to the parent (Greenberg, Cicchetti, & Cummings, 1990). Favourable parenting responses therefore ensue. Importantly, patterns of infant attachment observed in the first year of life tend to persist (Bowlby, 1988).

Studies of attachment relationships within maltreating families have helped to distinguish the significant role a secure-attachment relationship plays in the
development and maintenance of child abuse and neglect (Cicchetti, 1989; Erickson, Egeland, & Pianta, 1989; Toth & Cicchetti, 1996). Further, support for the lasting influence of early attachment relationships has been demonstrated by research attempting to determine the antecedents of child abuse and neglect. Child abuse and neglect represent extremes of child-caregiving dysfunction and many parents who abuse or neglect their children were themselves a victim of abuse or neglect in their own childhood (Egeland, Jacobvitz, & Sroufe, 1988).

Likewise, social learning theory commonly guides research into outcomes for abused and neglected children. The emphasis here is on social skills and the generalisation of behaviour patterns rather than attachment bonds that influence the way children view themselves and others. Taken together, there is an expectation that children who have been abused will have difficulties interacting with their peers, experience reduced self-esteem, and demonstrate decreased emotion regulation and problem-solving abilities (Wolfe et al., 1992; Youngblade & Belsky, 1990).

In accordance with these assumptions, research evidence links child abuse and neglect with social competence. Two investigations based on observations of toddlers in the playground compared children aged one to three years with a history of abuse with matched comparison children having no history of abuse (George & Main, 1979; Main & George, 1985). George and Main observed children in a day care setting. They showed that abused children more frequently assaulted both peers and caregivers spontaneously compared with non-abused peers. In response to friendly initiations, abused children were less likely to respond than non-abused children were, or they responded with approach-avoidance behaviours. In a later study, Main and George reported that abused children displayed no concern for the distress of a peer, whereas children with no history of abuse showed interest, concern, empathy or sadness towards distressed peers. Moreover, abused children also demonstrated aggression, fear or anger in response. Similarly, Howes and Eldredge (1985) observed abused and non-abused children's play behaviour. In response to aggression, abused children used aggression or resistance in contrast to non-abused children who generally responded with distress:
Klimes-Dougan and Kistner (1990) who reported similar results for abused preschool aged children have supported these studies more recently. Again, children with a history of abuse showed more aggressive and withdrawal behaviours in response to distressed peers than non-abused children. Using a somewhat different approach, Barahal, Waterman, and Martin (1981) compared six to eight-year-old abused and non-abused children. In this older age group, abused children manifested greater external locus of control and less understanding of social roles than non-abused peers did. These results suggest that child abuse experience impacts on children’s ability to discriminate and identify emotions, resulting in diminished social competence (Wolfe et al., 1992).

It is beyond the scope of this thesis to comprehensively review the wide range of adjustment problems that are found among abused and neglected infants, toddlers, and older children. But it is important to highlight the implications of these outcomes to inform preventive efforts. From a theoretical standpoint, it has been suggested that in light of emerging evidence that child abuse and neglect is responsible for a range of behavioural and emotional adjustment problems, it is necessary for clinicians and researchers to broaden approaches to problematic childhood behaviours (Wolfe, 1993). That is, developmental concerns underlying children’s behaviour must be considered in the treatment plan. Moreover, that the context within which children grow and develop should be strengthened.

A difficulty with this approach is that family is the child’s central microsystem (Bronfenbrenner, 1979). Therefore, to impact upon abusive families and improve developmental outcomes for children, it is necessary to determine the degree of opportunity for optimal development of the child. Further, the family can be understood as a social institution linking the individual to society (Friedman, 1992). As the young child develops, the microsystem expands from the home and immediate caregivers, to other individuals and a variety of contexts. For instance, playgroup, childcare, or school may further influence the child’s development. Over time, the capacity to experience a wider and increasingly interactive microsystem further provides the opportunity for optimal development (Garbarino & Ambramowitz, 1992).
Consequently, there are limitations for interventions that take place after child abuse or neglect have occurred. Although treatment for parents and child victims remains an important and necessary part of comprehensive service delivery, a broader approach is needed. In comparison, early intervention and prevention strategies seek to assist families in developing skills and knowledge that, over time, may prevent the emergence of dysfunctional parenting behaviours. The focus is shifted away from child abuse and related forms of maltreatment to promoting a balance between the child’s needs and the parents’ abilities.

During the past three decades researchers and clinicians alike have attempted to determine the most appropriate and effective methods for the prevention of child abuse and neglect. These prevention efforts can operate at a community level offering support to all new families before or soon after the birth of a child. Families can be screened to identify risk for child abuse and neglect or, high-risk families may be identified and given priority for intervention programmes. The capacity to plan and implement remediation and prevention efforts for child abuse and neglect relies on a clear understanding of crucial characteristics that are common to abusive parents and caregivers. As such, analysis of the literature reveals that a considerable amount of child abuse and neglect research has focussed on risk factors for child abuse and neglect, rather than consequences.

**Risk Factors for Child Abuse and Neglect**

Identifying the mechanisms by which various factors lead to child abuse and neglect has been the focus of a number of studies using a range of methodologies. Contemporary efforts to model the process by which child abuse and neglect develops and is maintained over time generally include developmental history, personality factors, cultural expectations, familial interactions, and child characteristics (Daro, 1993; Zeanah, Boris, & Larrieu, 1997). Early behavioural explanations were drawn from research demonstrating that child abuse and neglect was an outcome of individual parental psychopathology and child rearing history of the abusive parent (Oliver & Taylor, 1971; Steele & Pollock, 1968). Belsky (1988) argues that it was not until the 1970’s when sociologists such as Gelles (1975) highlighted that social characteristics of families were also important in
understanding child abuse, that the predominant psychiatric view of child abuse and neglect was challenged. Both psychiatric and sociological perspectives are appealing in their capacity to explain factors that determine the process of child abuse and neglect. However, neither of these perspectives completely addresses individual competencies, or motivations for parental abuse and neglect. Hence, in addition to the psychiatric and sociological perspectives, developmental psychologists have argued that the child’s role in the process of child abuse and neglect warrants attention.

Physical and behavioural characteristics of children often influence parental behaviour towards them (Belsky, 1988). For example, temperamental difficulties such as feeding, sleeping, and high activity levels in infancy and toddlerhood are related to parental adjustment problems (Thomas & Chess, 1977; Zeanah et al., 1997). Robert’s (1988) argues that improving the child’s behaviour through therapy can influence parental perceptions of child temperament and other child characteristics, thereby reducing the child’s risk for maltreatment. Thus, vulnerability to child abuse and neglect may vary according to the influence of genetic risk factors.

Importantly, crucial elements linking adjustment to the parenting role with child abuse and neglect are found in a wide range of adverse socioenvironmental factors. For instance, stress within the family environment has been proposed as a notable indicator of child abuse potential (Abidin, 1990; Kotch et al., 1995) and two broad domains of influence upon parenting stress have been identified (Belsky, 1984). These are firstly contextual sources of stress and support and secondly parents’ personal psychological resources and history. Belsky (1984) argues that families undergo at least some change in functioning during the transition to parenthood, regardless of their characteristics or social environment. Therefore, analysis of the literature supporting socioenvironmental and psychosocial factors as sources of parenting stress may reveal important characteristics common to parents demonstrating dysfunctional parenting behaviour.
Factors Acting Upon the Family

Sole parenthood, Bronfenbrenner (1979) argues that broad institutional patterns of culture and social ideology either influence impoverishment or, on the other hand, enrichment of family development. The role of the family as a social construct and the organisation of families change significantly over time. Urbanisation, the changing role of women and related implications for men and families, the changing role of children, reproductive technologies, contraception and birth control, individualisation, and consumerism have altered the context for parental role responsibilities. Thus, family forms differ widely, and contemporary social norms challenge traditional definitions of family (Garbarino & Abramowitz, 1992). At issue is the ability of individuals within non-traditional family forms to fulfil the responsibilities of parenthood. Currently, 16% of all Australian children live in female single-parent families, 2% live in male single-parent families, 76% live in two-parent natural families, and 6% live in two-parent step or blended families (Day, Lancaster, & Huang, 1997).

Female single-parent families are over represented in data for substantiated cases of child abuse and neglect. More specifically, of all substantiations in Australia during the period 1996 to 1997, 40% involved children from female single-parent families (AIHW, 1998). It is important to observe however, that in cases of substantiated child abuse or neglect the parent with whom the child lives is not necessarily the person responsible for the abuse or neglect (AIHW, 1998). Thus, single-parent status alone does not necessarily constitute risk for child abuse or neglect (Roberts, 1988). Mobility within and between families appears to increase the likelihood of a child experiencing abuse or neglect (Giles-Sims & Finkelhor, 1984) and although stepparents are over represented among abusers, the nature of the relationship between stepfamily structure and child abuse is unclear. Notably, single-parent families headed by women are frequently characterised by low socioeconomic status, poor quality housing, and low family and social support (AIHW, 1998). Therefore, consideration for the mechanisms by which socioeconomic disadvantage and inadequate social support influence parenting behaviour provides a significant
contribution to understanding the relationship between sole parenting and child abuse and neglect.

**Socioeconomic disadvantage.** A growing body of evidence suggests that socioeconomic determinants of health are strongly related to the degree of income inequality within a population (Mathers, 1995). For example, the third National Incidence Study of Child Abuse and Neglect in the United States of America (Sedlack & Broadhurst, 1996) reported a strong relationship between poverty and child abuse and neglect. Sedlack and Broadhurst’s report documents higher rates of abuse and neglect in families with the lowest income levels. The association between socioeconomic disadvantage and children’s health, development, achievement, and behaviour is also well documented (Brooks-Gunn & Duncan, 1997). Importantly however, child abuse and neglect is not confined to families in lower socioeconomic groups. Mechanisms that explain the relationship between socioeconomic disadvantage and child abuse and neglect have been well researched. Wilkinson (1997) argues that in developed countries such as Australia it is individuals’ sense of deprivation and disadvantage in comparison with others that places those with low incomes at high risk for violence. Family interactions are thus effected by the social consequences of low income such as stress, low self-esteem, and poor social cohesion. Further, Gelles (1987) claims that individual frustration and stress related to socioeconomic disadvantage may lead to violence and that violence is an adaptation or response to stress.

**Social support variables.** Research efforts during the past three decades have sought to establish that parents who maltreat their children characteristically have few social contacts and are not socially integrated or involved in their community (Cooey, 1996). However, the impact of social support on the parenting role has been difficult to clearly demonstrate (Burrell, Thompson, & Sexton, 1994; Cooey, 1996) since social support has been conceptualised and measured in various ways, both historically and in contemporary research (Gottlieb, 1985). Gottlieb has made a sound contribution to the literature by classifying the construct of social support into three distinct domains; macrolevel, mezzolevel, and microlevel of analysis. Firstly, at
the macrolevel of analysis, an individual’s social integration and participation measure social support. These factors are often measured by the level of involvement with institutions, voluntary community associations and informal social events in the community. The epidemiological study by Berkman and Syme (1979) is an example of such research where the researchers used the Social Network Index to assess social contact, then determine its relationship with stress moderation, and mortality. Further, contact with organisations such as churches and clubs has been used to determine level of social isolation and its relationship to child maltreatment. The mobility of families has also been examined extensively to determine whether it is predictive for child maltreatment. Families who move away from potential sources of support are thought to be at greater risk for child maltreatment (Cooey). However, as Gottlieb has argued, macrolevel studies are limited by the inability to inform the design of preventive programmes because they reveal “nothing about the number and kind of social contacts associated with low risk status, or about the interpersonal processes … which may lie at the heart of social support” (Gottlieb, 1985, p. 10). At the same time, macrolevel studies provide information about the way in which the social environment may be structured to optimise and maintain both individual and family health (Gottlieb).

The mezzolevel of analysis is the next measurement of social support and involves examination of social networks. These social networks consist of people identified by the individual as those who are close peers with whom regular contact is sought (Gottlieb, 1985). Social network analysis provides for the assessment of interpersonal transactions within the network as well as properties of the network as a whole. Perceived support from those who provide symbolic or material assistance, affirm or endorse behaviours, or provide emotional nurturance may influence adaptation to the stress response (Kelly, 1995). Importantly, the ability to source and utilise support effectively depends largely on interpersonal and social skills (Collins & Read, 1990). In addition, studies that rely exclusively on subjective perceptions of participants are limited in their ability to provide a clear picture of the interactions within social networks. In a comprehensive review of the social isolation and child maltreatment literature, Cooey (1996) stressed the difference between perceived
support and the actual quality and quantity of received support. Although parental perceptions of support have been studied extensively, fewer studies have measured received support to identify more than subjective perceptions (Crittenden, 1985). Evidence to suggest that individuals must perceive support networks as supportive in order for them to be beneficial has influenced this trend (Erickson, 1996).

The third approach to the measurement of social support is at the microlevel of analysis. The microlevel is characterised by the study of intimate relationships and is based on the premise that social support is derived from only a select few with whom a deep emotional relationship exists (Gottlieb, 1985). This approach focuses on quality of social relationships rather than quantity or organisation of supports. The advantage of this approach is evident when it is considered that certain social connections may indeed be sources of stress, rather than sources of support (Gottlieb, 1985). Again, interpersonal and social skills influence the ability to benefit from social support.

The diverse literature of the influence of social support on parenting behaviour reveals that social support interventions need to be planned, implemented and evaluated with an understanding of how families work and develop (Garbarino & Abramowitz, 1992). For example, Oakley (1992) found that provision of a social support intervention during pregnancy influenced patterns of sociability in general. Oakley observed that women who had received home visits from community midwives were more likely to say that they had a lot or a few close friends in the community one year after the intervention, compared with women who did not receive social support during pregnancy. Oakley concluded that the social support programme influenced members of the mother’s social network to enhance their support, as well as assisted mothers to develop a wider network and become more involved with relationships outside the home.

A wealth of findings from earlier studies (Bryce, Stanley, & Garner, 1991; Langer et al., 1996; Oakley, Rajan, & Grant, 1990; Rothberg & Lits, 1991; Spencer, Thomas & Morris, 1989) did not demonstrate a link between the provision of a social support intervention during pregnancy, and infant outcome. Yet, social support intervention during pregnancy was successful in preventing low birth weight infants
in a more recent clinical trial of low-income Afro-American pregnant women (Norbeck, DeJoseph, & Smith, 1996). The Norbeck et al., study included only those mothers with previously identified, inadequate social support from either the participant’s mother or male partner (influential sources of support previously identified in relation to pregnancy outcomes for this group of women). Unfortunately, both the criteria for inadequate support and intervention in the Norbeck et al., study were culture-specific, so that the results cannot be generalised to other groups of women.

It appears that as the concept and methodological issues related to the social support construct become more clearly articulated, optimal evaluation of social support interventions will reveal their true benefit. More research into the social support construct, and how the perception of being supported influences parental stress and parenting behaviours is needed. In the meantime it appears that for those with limited support, whose network provides poor quality support, or who are unable to engage a support network, social support interventions can compensate for these deficits (Erickson, 1996; Oakley, 1992).

Factors Within the Family

History of family violence. There is an emerging awareness of the prevalence of domestic violence and the consequences for both women and children who live in violent households. For example, an alarming 29.7% (N = 301) of women interviewed in the antenatal period in a Brisbane study reported a history of abuse and 8.9% reported abuse during pregnancy (Webster, Sweett, & Stolz, 1994). Domestic violence affects children either directly by increasing their chances of physical harm and through their observances of violence, or, indirectly by way of increased maternal levels of stress and depression (Levendosky & Graham-Bermann, 1998). The impact of domestic violence on children who live in families where violence is a feature varies according to a number of factors. These include the age of the child, the child’s stage of development, the nature of the domestic violence and protective or moderating factors that exist for the child (Jaffe, Wolfe, & Wilson, 1990).
The age of the child determines the extent to which intrafamilial violence will result in physical harm to the child. Strang (1996) suggests that younger children are less able to flee from physical attacks during violent episodes in the home, making them more vulnerable to serious physical harm. Importantly, being witness to domestic violence in the home environment has been shown to affect children’s social and emotional adjustment (Graham-Bermann & Levendosky, 1998; Levendosky & Graham-Bermann, 1998; McCloskey, Figueredo, & Koss, 1995). The mechanisms through which adjustment is moderated for children living in violent homes are not clearly understood and further study is needed. However, it is plausible that parenting style and maternal adjustment to the parenting role strongly influence children’s vulnerability to the adversity of living within a family where violence is perpetrated.

Previous experiences of childhood abuse or neglect in parents. As already noted, it appears that children of parents with a history of childhood abuse or neglect are at increased risk for abuse and neglect (Widom, 1989). However, evidence for the association between experiencing abuse during childhood and becoming a perpetrator of child abuse is not strong. Roberts (1988) argues that because childhood abuse can lead to a sense of worthlessness, lowered self-esteem, social isolation, and a range of life stressors in adulthood, parents abused as children themselves are vulnerable to relationship problems with their child. Others concerned with describing the mechanisms by which childhood abuse affects later parenting behaviour have proposed genetic and biological variables (DiLalla & Gottesman, 1991) or attachment style (Lyons-Ruth & Zeanah, 1993; Zeanah & Zeanah, 1989) as mediators of this relationship.

Psychopathology in parents and parental depression. Parental psychiatric illness is another factor associated with problematic parenting and altered attachment to the infant. Affective availability and the parents’ ability to tolerate infant behaviours are important domains of parenting that may be altered by parental psychiatric illness (Mayes, 1995; Zeanah et al., 1997). Zeanah et al., suggest that the
degree to which psychopathology in parents alters parent-infant relationships depends on the severity and chronicity of the disorder.

Research analysing men’s adjustment to their own and their partner’s parenting roles reveals that the new father’s experience is unique and challenges future child abuse and neglect research and practice (Barclay, Donovan, & Genovese, 1996; Barclay & Lupton, 1999). Further research is required, as men’s adjustment to parenting has received little attention in the past. On the other hand, maternal depression is one of the most well researched areas of parental psychopathology, with studies over the past decade providing evidence for distinct patterns of altered parenting behaviour of depressed mothers. Evidence for altered parenting behaviour is important because women in the postnatal period have a threefold increase in the relative risk of depression compared with non-childbearing women (Cox, Murray, & Chapman, 1993). O’Hara and Swain (1996) estimate that almost thirteen percent of childbearing women may experience non-psychotic postnatal depression. It is unclear whether the three forms of disorder, the ‘blues’, postnatal depression, and postnatal psychosis is each a distinct entity, or whether they lie along a spectrum of severity (Harding, 1989). There is, however, evidence to suggest a link between early postnatal mood within the first week, and postnatal depression at six weeks postpartum (Hannah, Adams, Lee, Glover, & Sandler, 1992). Although oestrogen supplementation can be an effective treatment for non-psychotic postnatal depression in some cases (Gregoire, Kumar, Everitt, Henderson, & Studd, 1996), psychosocial stressors are clearly related to the disorder (Harris, 1994). Women who are diagnosed with postnatal depression are likely to have a history of psychological disturbances including psychopathology during the antenatal period. In addition, a poor marital relationship, social isolation, and stressful life events during pregnancy increase the risk (O’Hara & Swain, 1996).

Increasingly, the importance of maternal psychological outcome on attachment and the healthy development of children is receiving attention as the long-term impact of postnatal depression on the mother, her infant, and the entire family has become more convincingly established (American Psychiatric Association (IV), 1994; Murray, Cooper, & Stein, 1991). Of importance to the current discussion
is the effect of maternal depression upon attachment because maternal-infant attachment is disturbed when the mother suffers from a debilitating depressive disorder (van Ijzendoorn, Golberg, Kroonenberg, & Frenkel, 1992). Moreover, there is growing evidence to suggest that maternal depression during the first six months postpartum may be related to children's impaired social development (Field, 1992) as well as behavioural and cognitive deficits (Cogill, Caplan, Alexandra, Robson, & Kumar, 1986; Cummings & Davies, 1994; Murray, 1992; Sharp et al., 1995). The depressed mother is likely to be unavailable psychologically for the infant, not only during periods of acute depression but also at other times (Field, 1992). The infant of a depressed mother may be exposed to sadness, helplessness, hopelessness, irritability, and confusion. Importantly, risk for development of insecure attachment may be ameliorated by a secure relationship with the father or another caregiver as it is the nature of parental care provided rather than depression itself that contributes to insecure attachment (Hammen, 1992).

Parental drug or alcohol addiction. Another family factor associated with child abuse and neglect is parental substance abuse (Mayes, 1995; Wolfner & Gelles, 1993). Substance abuse is a global term used to define use or abuse of a range of substances including alcohol, illicit drugs, and prescription drugs (Tomison, 1996b). Many families who present to child welfare authorities for child abuse or neglect report parental substance abuse, and Dore, Doris, and Wright (1995) argue that it is a primary factor related to increasing rates of foster care placement. Although it is understood that alcohol consumption releases inhibitions and can result in violence, alcohol and other substances abuse does not singularly influence child maltreatment (Browne & Herbert, 1997). Explanations for the association between substances abuse and child maltreatment focus on individual, family, and social environment factors (Mayes, 1995). For example, parental substances abuse may coexist with parental psychopathology, depression, antisocial personality, multigenerational substance abuse patterns, or family violence (Mayes, 1995). Moreover, substances abuse appears to be more prevalent among mothers living in poverty (Halpern, 1993).
Adolescent parenthood. Young mothers are perceived to have higher potential for child abuse and neglect due to their own developmental characteristics and needs (Thomas & Rickel, 1995). In addition to attending to their own educational, health and developmental requirements, adolescent mothers may lack knowledge of infant development, parenting skills, and have fewer resources to call upon to assist them in their adjustment to the parenting role (Hurlbut, Culp, Jambunathan, & Butler, 1997; Ruchala & James, 1997). Interestingly, a large body of research indicates that adolescent mothers do differ significantly from adult mothers in interactions with their infants (Zeanah et al., 1997). Adolescent mothers have been found to be less responsive and less sensitive in interactions with their infants, and to display higher levels of parenting stress than adult mothers (Passino et al., 1993). Culp, Osofsky, and O’Brien (1996) observed that adolescent mothers in their study were more passive, less expressive, made fewer vocalisations, and gave more commands and authoritarian statements, even when matched on demographic characteristics other than age. Furthermore, during observed play episodes, adolescent mothers were not as resourceful, patient or positive with their infants compared with older mothers (Culp, Culp, Osofsky, & Osofsky, 1991).

Differences in attachment classifications between infants of adolescent and adult mothers have also been noted. Infants of adolescent mothers show significantly more avoidant behaviour, are more likely to be avoidantly attached, and have a heightened risk for disorganised attachments to their mothers according to Zeanah et al., 1997. These attachment patterns are shown to be associated with dysfunctional and insensitive caregiving (Bowlby, 1988).

Interestingly however, there is insufficient evidence to determine whether young mothers are at increased risk for parenting difficulties or maltreatment of their children compared with older mothers (Leventhal, Egerter, & Murphy, 1984; Melhuish, 1989; Siegel et al., 1996; Stier, Leventhal, Berg, Johnson, & Mezger, 1993). Although results from the Connelly and Straus (1992) study indicated that maternal age at the birth of the firstborn child was a significant predictor of child physical abuse, results from the same study demonstrated that maternal age at the time of abuse was not. Leventhal et al., (1984) found only a modest increase in
physical abuse reports when maternal age was less than twenty years, and an even weaker association for mothers younger than 18 years. Although physical abuse occurred more frequently in children of young mothers in the study by Stier et al., (1993), again there was no statistically significant difference.

Adolescent parenting behaviours have been shown to be more variable than adult parenting behaviours (Culp, Appelbaum, Osofsky, & Levy, 1988). The tenuous link between parenting dysfunction and adolescent parenting is therefore likely to be mediated by other factors. For instance, Smith (1996) found significantly higher pregnancy rates among teenagers with a maltreatment history, and the effect seemed more pronounced for those who reported a range of childhood maltreatment experiences. Furthermore, the relationship between childhood maltreatment and adolescent pregnancy appeared to be mediated by poor school experiences and involvement in risk behaviours in Smith's study. Thus, adolescent mothers often face profound adversity, so that an interactive framework of support may influence their successful adjustment to the parenting role (Kelly, 1995). However, programmes offering intervention to adolescent mothers and their infants may not be well accepted, or used beneficially (Osofsky, Culp, & Ware, 1988). A large Australian study by Burdekin, Carter, and Dethless (The Burdekin Report) (1989) identified that young people generally do not access mainstream health services in proportion to their representation in the community. The Burdekin Report summarised that community services need to be targeted, non-judgemental, and responsive to a complexity of needs either by offering an integrated service or by accessing a network of compatible services (Burdekin et al., 1989, p. 240).

The concept of stress in family functioning offers one of the most comprehensively studied variables in child abuse that has been shown to be an important predictor of child abuse potential (Abidin, 1990). Researchers have concentrated their efforts on a number of situational stressors to establish that the relationship between stress and family violence is mediated by interactive relationships within and outside the family. In summary to this section on factors acting upon and within families, it is clear that parent, child, and contextual factors influence the development and maintenance of child abuse and neglect. Further, it
appears that socioenvironmental and psychosocial factors are not precisely predictive for child abuse and neglect, as there are no identified predictive weights for any set of contextual sources of abuse. For example, factors associated with sexual abuse are not necessarily related to physical abuse, while factors related to neglect are frequently not associated with other forms of child abuse. On the other hand, some factors such as childhood abuse of either parent are linked to all forms of child abuse and neglect. Hence, what emerges from reviewing the literature is an understanding of how interconnecting systems of the family environment shape and influence family functioning. Thus, looking both within the family at individuals and their interactions as well as beyond that system provides an understanding of the impact these systems have on parenting behaviour and child development.

Fundamental to child abuse prevention planning is reliable identification of families who are most at risk by way of a non-stigmatising approach. This involves using assessment methods that identify families with risk characteristics for developing and maintaining child abuse and neglect. Moreover, once families are identified as needing particular attention, it is important to determine the most effective and appropriate preventive intervention. Therefore having reviewed parent, child, and contextual factors that contribute to parenting dysfunction and child maltreatment, the next section reviews literature related to applied issues in identifying risk for child abuse and neglect.

**Applied Issues in Identifying Risk for Child Abuse and Neglect**

One of the most consistent themes of the child abuse and neglect literature is the importance of identifying key risk factors for child maltreatment because the ability to identify and engage appropriate target populations underpins planning preventive strategies and programmes. The problem for community health service providers is that families at risk for child abuse and neglect are frequently among those least likely to access health services. These families are often isolated and marginalised from traditional services due to their personal and/or socioenvironmental characteristics (Ferguson et al., 1984; Ford et al., 1990; Hart, 1971). Therefore, screening families for potential child abuse and neglect characteristics requires careful assessment based on empirical evidence for risk.
A host of characteristics that are common to parents convicted of child abuse or neglect (Ammerman & Hersen, 1990; Leventhal, 1988; Leventhal et al., 1984) as well as to child victims of abuse (Browne & Saqi, 1988) have been reported for the purpose of devising an approach to detecting children who may be at risk. Correspondingly, an increased effort to develop acceptable, valid, and reliable assessment and screening tools for use in maternity hospitals and community agencies has emerged.

Armstrong and Wood (1991) suggest that the perinatal period provides a window of opportunity for discerning family characteristics that predispose to child abuse and neglect. However, targeting selected families with high-risk characteristics for child abuse and neglect is a controversial issue (Barker, 1990; Thyen, Thiessen, & Heinsohn-Krug, 1995). Barker has particular concerns about the relative value of assessment and screening tools and cautions against stigmatising individuals and community groups. These views concur with those of Browne and Herbert (1997) who argue that screening not only identifies vast numbers of families who do not go on to abuse their children as potentially abusive but also, unfortunately, fails to distinguish some families who do.

Despite these concerns, the ability to screen families for child abuse and neglect potential is appealing when resources are scarce and a range of instruments are used as assessment and screening tools. For example, The Hawaii Healthy Start programme in the United States of America employs The Family Stress Checklist (FSC) (Breakey, Pratt, Morrell-Samuels, & Kolb-Latu, 1991) as their standardised instrument to determine eligibility for family support services. The FSC includes factors such as abuse of the parent in childhood, criminal history, mental illness, substance abuse, self-esteem, isolation, and discipline practices. Another method of screening is by way of self-report questionnaire, although few self-report instruments for child abuse and neglect screening have demonstrated reliability and construct validity. The 160-item Child Abuse Potential Inventory (CAPI) (Milner, 1986) is an exception.

A review of the determinants of parental child abuse reveals a complex event involving parental characteristics, child characteristics, immediate family systems,
demographic and cultural characteristics (Ammerman & Hersen, 1990). A study of the association between risk variables using longitudinal design and a large number of variables demonstrated that the likelihood of a child experiencing abuse and neglect increased as the number of risk factors increased (Brown, Cohen, Johnson, & Salzinger, 1998). Furthermore, by examining a comprehensive set of risk factors, child physical abuse, sexual abuse, and neglect were each characterised by a particular combination of risk factors (Brown et al., 1998; Chaffin, Kelleher, & Hollenberg, 1996). These findings indicate that coexistence of a vast range of variables requires accurate assessment to screen for families at risk for child abuse and neglect. Nevertheless, Browne and Herbert (1997) used a twelve-item checklist of child abuse and neglect risk characteristics to identify predictive variables for abuse and neglect of newborn infants in the first five years of life. Browne and Saqi’s (1988) earlier work in identifying characteristics common to abusing families served as the basis of the checklist. Table 1 shows the relative predictive value of screening characteristics for child abuse as presented by Browne and Herbert (1997, p. 120).

These data provide evidence for using a range of characteristics to predict child abuse and neglect specifically during the child’s first five years. Accordingly, a household characterised by intrafamilial violence is a strong risk factor for child abuse in the first five years of life whereas a child born with physical or mental limitations is at risk, but the risk is relatively low. Research concerned with the effects of parental divorce has demonstrated that features of marital conflict predict children’s mental health (Amato & Keith, 1991), and that children witnessing marital conflict may actually learn about conflict resolution and problem solving (Cummings, 1997; Cummings & Davies, 1994). Cummings argues that when marital relationships are examined in detail, some forms of marital conflict are shown to be highly destructive while others help children by actually teaching them communication and negotiation skills. As such, although marital conflict appears to be a risk factor for child abuse and neglect in addition to subsequent psychopathology for child witnesses, conflict may act as a protective, or potentiating mechanism enhancing future relationships throughout a child’s lifespan.
Table 1

Relative Predictive Value of Screening Characteristics for Child Abuse as Determined by Discriminate Function Analysis
(Ranked in order of importance with percentage prevalence)

<table>
<thead>
<tr>
<th>Checklist characteristics</th>
<th>Abusing Families (%)</th>
<th>Non-abusing families (%)</th>
<th>Conditional Probability* (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. History of family violence</td>
<td>30.2</td>
<td>1.6</td>
<td>12.4</td>
</tr>
<tr>
<td>2. Parent indifferent, intolerant or over-anxious towards child</td>
<td>31.1</td>
<td>3.1</td>
<td>7.0</td>
</tr>
<tr>
<td>3. Single or separated parent</td>
<td>48.1</td>
<td>6.9</td>
<td>5.0</td>
</tr>
<tr>
<td>4. Socioeconomic problems such as unemployment</td>
<td>70.8</td>
<td>12.9</td>
<td>3.9</td>
</tr>
<tr>
<td>5. History of mental illness, drug or alcohol addiction</td>
<td>34.9</td>
<td>4.8</td>
<td>5.2</td>
</tr>
<tr>
<td>6. Parent abused or neglected as a child</td>
<td>19.8</td>
<td>1.8</td>
<td>7.6</td>
</tr>
<tr>
<td>7. Infant premature, low birth weight</td>
<td>21.7</td>
<td>6.9</td>
<td>2.3</td>
</tr>
<tr>
<td>8. Infant separated from mother for more than 24 hours post-delivery</td>
<td>12.3</td>
<td>3.2</td>
<td>2.8</td>
</tr>
<tr>
<td>9. Mother less than 21 years old at time of birth</td>
<td>29.2</td>
<td>7.7</td>
<td>2.8</td>
</tr>
<tr>
<td>10. Step-parent or cohabitee present</td>
<td>27.4</td>
<td>6.2</td>
<td>3.2</td>
</tr>
<tr>
<td>11. Less than 18 months between birth of children</td>
<td>16.0</td>
<td>7.5</td>
<td>1.6</td>
</tr>
<tr>
<td>12. Infant mentally or physically handicapped</td>
<td>2.8</td>
<td>1.1</td>
<td>1.9</td>
</tr>
</tbody>
</table>

* ‘Conditional probability’ refers to the percentage of families with a particular characteristic that later abuse and/or neglect their newborn in the first five years of life.

Note. Adapted from Preventing Family Violence (p. 120), by K. Browne and M. Herbert, 1997, Chichester: John Wiley & Sons Ltd. Copyright 1997 by John Wiley & Sons Ltd.
Further, a range of other factors and explanations for child abuse and neglect have not been included in Browne and Herbert's (1997) analysis. As previously discussed, social support variables are especially predictive of child abuse and neglect. However, many families under stress do not abuse or neglect their children. Therefore comprehensive understanding of factors influencing child maltreatment calls for an examination of variables that mediate the risk for child abuse and neglect.

There are conditions that enhance parents' ability to promote parent-child attachment and consistently maintain nurturant parenting strategies. These conditions are described as protective factors due to their positive influence despite adverse environmental factors (Rutter, 1990). While risk factors refer to settings or environments associated with increased likelihood for child abuse and neglect, protective factors refer to the experiences or conditions that positively influence child, parent, and family functioning (Dunst & Trivette, 1997).

**Protective Factors**

Longitudinal research has demonstrated that protective factors increase the probability of success for children who grow and develop in the face of environmental challenges to their development (Werner & Smith, 1992). Moreover, recent research of individual variation in response to sociocultural risk has been undertaken (Losel & Bliesener, 1994). Losel and Bliesener demonstrated that a positive self-concept, an achievement orientation, and a proactive coping style rather than a tendency to react defensively, are protective mechanisms for children who grow and develop in high-risk environments. Formative studies of Murphy and Moriarty (1976), Block (1981), and Werner and Smith (1992) provided an understanding of the relationship between risk and protective factors in children from adverse environments. Werner and Smith (1992, p. 192) summarised the results of their work in determining which factors or individual characteristics play an important part in promoting optimal development for individuals as:
(1) at least average intelligence and dispositional attributes that elicit positive responses from family members and strangers, such as robustness, vigour, and an active, sociable temperament;

(2) affectional ties with parent substitutes such as grandparents and older siblings, which encourage trust, autonomy, and initiative; and

(3) an external support system (in church, youth groups, or school) which reward competence and provided them with a sense of coherence.

Clearly, incorporating interactions of risk and protective factors into clinical research provides a pathway for planning prevention and early intervention strategies (Belsky, 1980; Langeland & Dijkstra, 1995). Thus, prevention and early intervention programmes attempt to provide conditions associated with a range of positive outcomes for children and families as well as reduced risk for child abuse and neglect.

The way in which contextual factors influence parenting competency depends upon the interaction of a number of processes. Self-efficacy and human attachment concepts have contributed greatly towards understanding the systems within which parenting behaviours operate. These concepts have been useful in the planning and evaluation of strategies aimed at reducing child abuse and promoting positive parenting practices and will therefore be discussed in some detail. Firstly, the concept of self-efficacy has been an important variable considered by researchers attempting to evaluate programmes aimed at optimising and promoting protective environmental factors. Bandura’s (1977a) self-efficacy theory conceptualises human learning and motivation in terms of cognitive processes, facilitating analysis of the way in which programmes or therapeutic interventions influence parental behaviour. Self-efficacy is based on the following beliefs held by individuals. First, that the health promoting behaviour will be of benefit, that is, outcome expectation, and second, belief in the personal ability to achieve the behaviour, that is, efficacy expectation. Outcome expectations and efficacy expectations are central tenets of self-efficacy theory. They are the anticipatory aspects of behaviour, or the antecedent
determinants of behaviour (Bandura, 1977a; Bandura, 1986). Bandura distinguishes between them, and points out that although individuals may believe that certain outcomes will result from a given behaviour (outcome expectations), behaviour change will not result unless there is a belief in the ability to perform the activities (efficacy expectations). Thus, it may be concluded that information does not independently influence behaviour.

The concept of self-efficacy is an important variable in research pertaining to the modification of behaviour. It is particularly useful as a framework for promoting maternal-infant attachment behaviours, health promoting behaviour of parents for their children, and maternal adjustment to parenting, because it is efficacy expectations that influence both the initiation and continuance of the behaviours (Olds, Kitzman, Cole, & Robinson, 1997). Maternal perceptions of self-efficacy can therefore influence the caregiving choices of mothers for their children, and can determine the level of undertaking given to promote these choices in unfavourable situations. Self-efficacy is not the only determinant of behaviour, but it is held that perceived efficacy might improve with appropriate skills and motivation. According to Bandura’s (1977a) social learning analysis, individual efficacy expectations are influenced by four main sources of information. They are performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. These are used to judge personal level of self-efficacy, but vary in their ability to influence it.

The most influential source of information on efficacy expectations is performance accomplishments, because, Bandura argues, it is based upon operative personal experiences. Expectations learned from personal experiences in similar situations are known as performance attainments (Perry, Baranowski, & Parcel, 1990), and repeated success results in strong efficacy expectations. Efficacy expectations can reduce anxiety about a situation and increase skill level so that when repeated success has strengthened self-efficacy, it can be sustained, even with occasional failure (Perry et al.).

When efficacy expectations are learned from observing another person’s success, it is called vicarious experience. This can be effective, however it is not as
influential as experiencing personal achievement. Other sources of efficacy expectations have even less impact. For example, verbal persuasion is less effective because an individual’s assessment of personal experience can counteract the effect. Information concerning personal competency is received from the anxiety and fear expressed as a result of stressful and demanding situations. According to Bandura, it is therefore a source of information that may lead to the perception of vulnerability or, conversely, the ability to cope well with threatening situations. This is referred to as physiological arousal. When threatening situations have been experienced, or efforts have resulted in failure in the past, individuals may avoid being placed in situations where they will have the opportunity to develop coping skills (Olds, Kitzman, et al., 1997).

The impact of enactive, vicarious, exhortative and emotive sources of information upon efficacy expectations, depends on the cognitive processing of the information used to determine a level of self-efficacy (Bandura, 1977b). Cognitive appraisal of both the context within which events occur, and the cause of behaviour may enhance or limit self-efficacy from behavioural attainments. For example, the social, situational and temporal circumstances within which activities are undertaken may limit the impact success experiences have on creating strong perceptions of self-efficacy. Although competence may be gained through successful performance, appraisal of the circumstances within which performance attainment occurs may result in the individual crediting the achievement to external factors rather than personal proficiency. Furthermore, Bandura argues that the impact of achievement success on self-efficacy is also influenced by the perceived difficulty of the task. Success with easy tasks provides no new information and therefore does not strengthen self-efficacy, whereas successful undertaking of difficult tasks provides evidence for competence.

Cognitive processing of efficacy information has direct implications for programme planning. The ability to provide opportunities for self-directed accomplishments is based on performance accomplishment and the impact of vicarious experience depends upon how influential the elements of the experience are. Firstly, once knowledge of the desired behaviour has been gained, opportunities
for self-directed accomplishments can be provided, to prevent adverse cognitive appraisal. Because the impact of efficacy information is based on personal accomplishments, and cognitive appraisal of the information determines its strength, methods of enhancing self-efficacy rely on parents successfully undertaking the behaviours. For example, desired parenting behaviours include behaviours for prevention of Sudden Infant Death Syndrome (SIDS), such as not over wrapping babies, and placing them to sleep on their back. However, parents may find it very difficult to settle their baby to sleep supine. They may then be unwilling to attempt to do so because it was previously a disconfirming experience. However, once methods for settling the baby in this way are gradually achieved, and the baby is more easily settled on its back, parental behaviour is firmly established. Successful achievement of a challenging task strengthens self-efficacy and perceived competence also affects susceptibility to anxiety related to the task (Bandura, 1977b).

A second important consideration related to cognitive processing of efficacy information is the extent to which modelling might influence the appraisal of vicarious experience. Bandura (1977b) lists the important elements of models' characteristics in terms of their ability to influence cognitive processing. These elements include "adeptness, perseverance, age, expertness, the similarity between models and observers, the difficulty of the performance tasks, the situational arrangements under which the modelled achievements occur, and the diversity of modelled attainments" (p. 202). These elements are worthy of consideration for programme planning. When effective parenting skills are modelled it is important that the parent is not inadvertently made to feel that the skills are beyond personal command and that the person modelling (the visitor) has taken over the care of the child.

Self-efficacy theory emphasises that the formation of a trusting and caring relationship is integral to the modelling strategy as it provides the environment for optimising its effectiveness (Olds, Kitzman, et al., 1997). Verbal persuasion may be used to reinforce preventive behaviours already demonstrated, but its impact also depends on cognitive appraisal. Bandura (1977b, p. 202) suggests that "the perceived
credibility of the persuaders, their prestige, trustworthiness, expertise and assuredness strongly influence the impact of verbal persuasion.

In summary, the endorsement of self-efficacy as the single most important factor in promoting behaviour change and its relevance in the design of parenting programmes, particularly home visiting programmes for parents with newborns, has become popular and widespread. Clinicians seeking to develop programmes for parents have been influenced towards a single variable approach to behaviour change. However, many variables need to be addressed in programme planning for the reason that parenting competency depends on multiple interacting components. Programmes need to include interventions that support the environment within which parenting behaviours are learned and modified.

Attention will now be directed towards the application of attachment theory to preventive and early intervention strategies. As research into the importance of early parent-child relationships to optimal human development improved, a better understanding of secure parent-infant relationships was gained. Empirical evidence now supports that a secure parent-infant relationship can buffer the effects of stress and enhance parenting competence (Browne & Herbert, 1997; Erickson, Korfmacher, & Egeland, 1992). Evidence suggesting that interactive relationships within families determine whether situational stressors result in child abuse and neglect prompted interest in how attachment research informs clinical practice (van Ijzendoorn, Juffer, & Duyvesteyn, 1995). Attachment researchers have used experimental designs to evaluate therapeutic approaches with varying success (Barnard et al., 1988; Beckwith, 1988; Brinich, Drotar, & Brinich, 1989; Erickson et al., 1992; Jacobson, & Frye, 1991; Juffer, van Ijzendoorn, & Bakermans-Kranenburg, 1997; Lyons-Ruth, Connell, Grunebaum, & Botein, 1990; van den Boom, 1991) and further research is necessary to define more clearly how the effects of interpersonal relationships within the family influence risk for child abuse.

If insecure infant-parent attachment is a risk factor for child abuse and neglect, it is expected that preventive and corrective attachment interventions reduce child abuse and neglect. Implications for human attachment concepts are therefore far reaching within the realms of both clinical practice and research. Early writers
such as Klaus and Kennell (1976), and Anisfeld and Lipper (1983) were inspired by Bowlby's thesis and promoted the importance of post partum bonding as an essential element of secure attachment. Interventions in the early postnatal period such as providing additional time for close contact between mother and infant were developed. Klaus and Kennell (1976) argued that skin-to-skin contact, eye contact, and physical closeness in the first three days of life enhanced behavioural, hormonal, physiological, and immunological mechanisms. Child's Play Therapeutic Programme (Worth, 1996) provides an Australian example of an intervention derived from the premise that early behaviours influence secure attachment and child development. Designed for victims of domestic violence, Child's Play Therapeutic Programme aimed to strengthen attachment between mothers and their children who had left a domestic violence environment. The programme attempted to enhance parenting skills and expand the knowledge base of child development as well as use early bonding rituals such as eye gazing, 'in arms' body contact, and mirroring in games style activities. Evaluation results showed a trend towards increased behavioural control with children who were previously acting out. Nevertheless, little empirical data is available to support the efficacy of such programmes. Worth's programme evaluation was undertaken on only five dyads, using no comparison groups, providing little evidence of its real strengths. Moreover, it is possible that sensory stimulation may have no bearing upon mechanisms involved with developing an attachment relationship (Rutter, 1995). Rutter argues that although these early applications of attachment theory were misguided, their importance lies in enhancing and facilitating the development of maternal-infant relationships.

More convincingly, researchers guided by the premise that attachment relationships develop over time and that multiple interacting systems impact upon parent-child relationships have provided the strongest evidence for the complexity of secure attachment variables throughout the lifespan (Crouch & Manderson, 1995). For example, the role of fathers has been an underrepresented dimension of attachment research until recently. Pruett (1998) asserted that fathers' influence on the social system within which a child grows and develops, as well as the way father-infant attachment relationships influence children's development is unique and
significant. Using meta-analysis, van Ijzendoorn and De Wolff (1997) revealed an association between paternal sensitivity and infant-father attachment in addition to an association between infant-mother and infant-father attachment. These findings provided an important foundation for future research and practice applications within the area of child abuse and neglect. A better balance may be achieved using a range of paternal, maternal, and child variables instead of relying on a gender-biased database.

Interestingly, Bloom (1998) demonstrated that in a sample of adolescent parents of newborns, a close and satisfying relationship with the newborn infant’s father positively correlated with maternal-infant attachment. At the same time, satisfaction with marital partner was also an important component of father-infant engagement (Belsky, 1985) and there is further evidence to suggest that the nature of the marital relationship exerts a greater influence on paternal interactions with infants than with maternal interactions (Pruett, 1998). It remains unclear how marital relationships influence parental attachment to infants, however it is becoming apparent that it is one of a considerable number of influential environmental factors. Further research is needed to broaden understanding of the way paternal involvement enhances child development and whether programmes aimed at enhancing father involvement with infants are effective.

Van Ijzendoorn et al., (1995) identified parallel approaches to the problem of addressing insecure infant-parent attachment from the literature. These two approaches were either: (a) directed towards parental sensitivity at the behavioural level; or (b) aimed at influencing parental mental representations of attachment. Therefore the following review identifies attachment intervention studies and attempts firstly to provide a description of the interventions and what they targeted for change including designs used and measured effects and secondly, present an analysis of the quality of evidence for the ability of these interventions to influence parental sensitivity or parental mental representations of attachment. Studies that measured infant-parent attachment as a distinct intervention outcome will be reviewed first and then a broader review of home based and home visiting intervention studies will be undertaken.
Using Attachment as a Model for Prevention and Early Intervention for Child Abuse and Neglect

The most common research approaches have been to apply preventive and early interventions based on parental support and education or to provide therapeutic interventions while measuring infant attachment as an indicator of intervention effectiveness (van Ijzendoorn et al., 1995). For example, the Lyons-Ruth et al., (1990) study compared rates of secure attachment between infants of depressed mothers who received a one-hour weekly home visiting service for at least nine months with rates for infants of depressed mothers who were untreated in a non-randomised study. This research indicated that infants of mothers visited at home were twice as likely to develop a secure attachment than comparison infants. Among nonintervention infants, very high rates of insecure attachment were observed (80%).

Intervention focussed on establishment of an accepting and trustworthy relationship, improving access to resources to meet basic needs, decreasing social isolation, and promoting an interactive relationship with the infant. Lyons-Ruth’s (1992) interpretation of these results attributed success to an ability of home visitors to promote new models of mother-infant relationships.

The Barnard et al., (1988) trial recruited participants in the middle trimester of pregnancy from public health clinics in Washington, DC. Targeting mothers with low social support, the research compared two intervention programmes each aimed at preventing social-emotional disturbances and developmental delay in children. Mothers were randomly assigned to one of two intervention models. Both home-based programmes had written protocols with specific goals and objectives but the content and organisation were different. The Mental Health Model focussed on increasing mothers’ support systems. Specifically, professional nurses developed supportive relationships with mothers in an attempt to increase the mothers’ social competence. The comparison model, described as an Information/Resource Model, aimed to increase maternal understanding of health factors during pregnancy, use of community and personal resources, and to promote positive feelings toward the pregnancy. Each mother was visited at home during pregnancy and until the end of the infant’s first year of life. A number of assessment instruments were used to
measure and compare outcomes between groups. These included the Beck Depression Inventory, Personal Resources Questionnaire, Community Life Skills Scale and Social Skills Scale as well as Nursing Child Assessment Teaching Scale And Nursing Child Assessment Feeding Scale. Infant-mother attachment was measured using the Ainsworth Strange Situation procedure (Ainsworth et al., 1978). Interestingly, while mothers in the intervention group were rated as more sensitive and competent on the Nursing Child Assessment Teaching Scale, no differences were shown between groups in classifications of secure attachment using Ainsworth’s Strange Situation procedure at 13 months. These findings did not support the association of maternal warmth and sensitive responsivity during the course of the first year of life with secure attachment. However, it is important to observe that the investigators found that less than half of all infants in their sample demonstrated a secure attachment relationship compared with around 70% of infants found within normative samples (Cicchetti, Toth, & Lynch, 1995).

Two similar datasets (Beckwith, 1988; Osofsky et al, 1988) were compared with data collected in the Barnard et al., (1988) study to determine differences between parent-child interactions in high-risk groups (Barnard, Osofsky, Beckwith, Hammond, & Appelbaum, 1996). Risk groups for the analysis included adolescent mothers, disadvantaged mothers and disadvantaged mothers with preterm infants. Few differences were shown between risk groups on parent-child interaction measures at infant ages 13 and 20 months (Barnard et al., 1996). However, when the data were compared with non-risk comparison group dyads, there were differences between the parent-child interactions demonstrating significantly better scores on maternal positive affect and maternal sensitivity at 20 months for non-risk, compared with high-risk mothers. The Barnard et al., (1996) effort to replicate measurements of attachment in three high risk samples provides a valuable insight into the importance of future research that takes contextual factors into account. The results suggest that the degree to which attachment security is influenced by maternal sensitivity is mediated by environmental influences. A recent meta-analysis of research on parental antecedents of infant attachment supported these findings and concluded that maternal sensitivity to infants was an important condition of attachment security.
(De Wolff & van Ijzendoorn, 1997). Several other dimensions of parenting are known to play a role in secure attachment and further research is needed to interpret complex interactions between context and maternal sensitivity.

Attachment intervention studies have varied widely in their approach and duration. After reviewing this area of the literature, van Ijzendoorn et al., (1995) concluded that longer, and more intensive interventions were not as effective in promoting maternal-infant attachment as short-term or less intensive preventive interventions. Further, it seems that behaviour orientated, short-term interventions were effective in enhancing parental sensitivity, but less successful in promoting infant’s attachment security. As van Ijzendoorn et al., concluded, it may be easier to change parental behaviour towards children than to influence children’s attachment security. Van Ijzendoorn et al., also found that there was a strong tendency for infants and parents to demonstrate similar attachment patterns. More particularly, patterns of attachment appeared to be transmitted from one generation to the next (van Ijzendoorn, 1995). The mechanisms responsible for apparent intergenerational transfer of attachment are not fully understood, although much work is currently being carried out (Juffer et al., 1997; Schuengel, Bakermans-Kranenburg, & van Ijzendoorn, 1999; Zeanah et al., 1997).

In conclusion, development of early intervention and prevention programmes relies upon building strengths and identifying protective factors that enhance parenting skills. Programmes targeting families in the perinatal period take advantage of the opportunity to influence the course of parent-child relationships at an early age. Early intervention involves establishing patterns of successful parent-child relationships that will buffer the effects of poor parental adjustment and limited personal and environmental resources. This is based on the premise that secure infant-parent attachment reduces risk for child abuse and neglect. Thus, it is expected that preventive and corrective attachment interventions will reduce child abuse and neglect. Whether knowledge and skills gained within the context of a supportive relationship provided during the transition to parenthood can significantly overcome multiple interacting systems that impact on the parent-child relationship is a question that requires further empirical evidence in order to be answered.
Not all studies concerned with parental support and education have measured infant attachment as an indicator of programme effectiveness. As we shall see, a range of outcome variables has been used to determine the success of preventive and early intervention strategies. Moreover, intervention techniques and strategies, although similarly based on principles of primary prevention, usually differ in content and purpose. Many programmes aimed at improving parenting competence, knowledge, and skills are home-based and increasing attention is currently paid to evaluation of effectiveness of home visiting services (Vimpani et al., 1996). A review of home visiting intervention programmes aimed at enhancing parenting environments for young children will therefore be reviewed in the next chapter as an introduction to the general aims of the study described herein.
CHAPTER 2

Home Visiting Programmes for Prevention and Early Intervention for Child Abuse and Neglect

Home visiting is not a new concept in service or intervention delivery. Home visiting for pregnant women and families with newborn infants has had a long history in Europe where universal home visiting has been in place since the early part of the twentieth century. Nevertheless, a review of research into the relationship between home visiting and child health outcomes in Europe reveals a dearth of evaluative study. In Europe, home visiting services are aimed at meeting both health goals and broader social objectives, focussing on healthy and optimal development of young children plus identification of social problems (Kamerman & Kahn, 1993). In Denmark, home visiting is considered to be a key component of public systems of health care which provide both cash benefits (maternity, parental, and sickness benefits) as well as health and medical services (Kamerman & Kahn). Thus, it appears that home visiting programmes are well accepted in European countries and that there is a pervasive belief that they are effective in promoting positive parenting practices.

Enthusiasm for home visiting programmes has increased in Australia in recent years, as well as in many other developed countries with initiatives being launched or recommended at state and national levels in the United States (Krugman, 1993) and Britain (Johnson, Howell, & Molloy, 1993). Home visiting is not a uniform intervention as programmes vary in their content, goals, and staffing. Nonetheless, as a strategy aimed at forming a supportive social infrastructure for young families preparing for parenthood, home visiting has demonstrated an ability to lower stress in families and improve maternal, child, and family outcomes (Olds & Kitzman, 1993; Scott, 1997).

The need for a greater research effort to appropriately and adequately evaluate Australian home visiting programmes has been identified (Vimpani et al., 1996) and at the same time, evaluation of health care activities has emerged as a priority. It appears that in the present environment of financial constraint on health
care budgets, managers seek a rational approach to resource allocation. The impetus for rigorous evaluation of health care services is driven further by key national and state government policy documents emphasising the importance of an 'evidence base' for health services and practices. Child health service providers, health care administrators, and managers of community child health services are increasingly concerned with the ability to plan services with the support of sound research evidence. The challenge to prove that health promotion is cost-effective or that prevention is cheaper than cure is seductive, but denies that the premise is value-laden (Rosenstock, 1990). Tension drawn from arguing for cost benefits of prevention rather than demonstrating programme benefits in terms of quality of life and prevention of suffering presents a central ethical dilemma.

Evaluation of home visiting has been constrained by numerous factors in the past. Foremost has been the relative low incidence of, and difficulty in measuring child abuse and neglect. Secondly, improved outcomes have been frequently brought about by changes in wider social family policies. Finally, programme evaluation has not been made mandatory (Vimpani et al., 1996). More recently, there has been a shift in emphasis away from a focus on testing the effectiveness of home visiting by measuring preventive health behaviour of parents for their children (Greenberg et al., 1994; Larson, 1980) towards a risk-opportunity framework. The risk-opportunity framework facilitates analysis of the way in which child, parent, and family variables are influenced by preventive and early intervention programmes (Dunst & Trivette, 1997). Accordingly, there are now several sources of research evidence from which to draw when reviewing home visiting services as preventive and early interventions for child maltreatment. Current evidence for the effectiveness of the home visiting strategy will now be reviewed.

Effectiveness of Home Visiting Programmes

Following the failure of earlier research attempts to conclusively determine the strength of preventive programmes for child abuse and neglect (Anisfeld & Lipper, 1983; Siegel, Bauman, Schaefer, Saunders, & Ingram, 1980), a research team led by Olds (Olds et al., 1986a) implemented a study of home visiting by nurses for the prevention of a wide range of child health and developmental outcomes as well
as maltreatment. Using a randomised clinical trial method, families were assigned into one of four comparison groups. One group served as a control, another was provided transportation to prenatal and clinic based health care, a nurse home visitor was provided to the third group during pregnancy and families allocated to the fourth group received a nurse home visitor until the infant reached two years of age. The home visiting intervention commenced in the antenatal period. The intervention featured parenting education, enhancement of social support networks, and alliance with health and human services. Attrition from the study ranged from 15% to 21% during the intervention period with no group differences in dropout rate. This trial demonstrated the ability of the home visiting programme tested to prevent child abuse, neglect, and reduce parenting dysfunction most notably amongst adolescent, unmarried, and underprivileged mothers. The child abuse and neglect incidence rate for young, disadvantaged, unmarried mothers was 19% in the control group compared with 4% of nurse-visited families with similar features. Olds and his colleagues therefore provided strong evidence for preventive effects of home visiting by nurses during the first two years of life in maternal and child health outcomes and child protection. Elements of the successful programme included: (a) frequent visits beginning in the prenatal period; (b) visits extending to two years after the birth of the infant; and (c) emphasis on targeting young, disadvantaged mothers. This trial made a unique contribution to the literature, in particular by clarifying how to select families most likely to benefit from the programme.

Ensuing publications from Olds’ trial indicated that the home visiting programme influenced many other variables longitudinally including rates of subsequent pregnancies, maternal participation in the workforce, and that the programme reduced government spending on low income families with children under two years of age (Olds et al., 1986a; Olds, Henderson, Tatelbaum & Chamberlin, 1986b). In contrast however, group differences shown throughout the first two years of the trial in the incidence of child abuse and neglect were no longer apparent during the two year period after the programme ended (Olds, Henderson, & Kitzman, 1994).
More recently Kitzman et al., (1997) attempted to replicate the trial in Memphis, Tennessee using different outcome measures of maternal and infant health to evaluate the programme with a unique sample. The Kitzman et al., trial tested the programme using an African-American sample of disadvantaged, single women living in a major urban community, and recruited in the antenatal period. The women were assigned according to the same four comparison groups used by the Olds et al., (1986a) trial. High rates of participation and retention were reported. Positive programme effects were also reported for a number of diverse health outcomes. Mothers with limited intellectual functioning, mental illness, and low parenting competence responded particularly well to the intervention of home visiting throughout the infant's first two years. Home Observation for Measurement of the Environment scales revealed that family homes of nurse-visited participants were more likely to be conducive to optimal intellectual and socioemotional childhood development. Although rates of child abuse and neglect were unable to be measured and compared, statistically significant differences were found for parenting beliefs associated with maltreatment such as empathy, punishment, and understanding of infant development in favour of the intervention group. Parental action for prevention of childhood injuries and ingestions appears to have been influenced by the home visiting programme. For the group receiving home visiting to infant age two years, infants were less likely to have presented with injuries and ingestions than comparison infants. Findings from the postnatal phase of the project were therefore consistent with findings from the Olds et al., trial. However, it is notable that different outcome measures, target group, and programme emphasis were used for the Memphis trial.

Follow-up studies undertaken 15 years from the Olds et al., trial have recently reported diverse long-term outcomes ranging from maternal life course, child abuse and neglect, to children’s criminal and antisocial behaviour (Olds, Eckenrode, et al., 1997; Olds et al., 1998). Child Protective Service databases were used to compare intervention and comparison families on child abuse and neglect rates over the fifteen year period. Although records were not complete for each group, it appears from data published that intervention families were less likely to have had a reported
incident of child abuse or neglect than comparison families. Evidence for the ability of the programme to reduce children's criminal and antisocial behaviour was more limited, making the claims tentative. Self-reports, teacher reports and school databases were used to measure levels of children's antisocial behaviour. Children born to mothers assigned to the home visiting programme antenatally and continuing throughout the first two years of the child's life were reported as having run away from home less often, having fewer arrests, and receiving fewer convictions than children born to comparison mothers. No differences were reported between alcohol and other substances abuse although mothers from the intervention group reported fewer behavioural disturbances related to substances abuse. It was held that the home visiting programme was the mechanism through which maternal life course was improved and subsequently children's antisocial and behavioural problems were ameliorated. Thus, the Olds et al., (1986a, 1986b) trial provides encouraging results for the ability of professional home visiting to prevent child abuse and neglect and to reduce inadequate parenting in high-risk groups. However, closer observation of parent-infant interaction and behaviour, and prudent selection of outcome variables are required in order to provide stronger evidence for the benefits of preventive programmes longitudinally.

Applying a cautious approach to interpretation of British research findings, Barker (1990) reported that Health Visitors in Britain, trained in the use of specific interventions aimed at empowering parents with knowledge and skills, enhanced parenting skills and reduced child abuse. Despite evidence that children from families receiving the home visiting intervention had a 41% lower rate of registration on Britain's Child Protection Register, and a 50% lower rate of physical abuse compared with children from the same districts (Barker, Anderson, & Chalmers, 1992), Barker warned of the tentative nature of the analyses. Specifically, different data collection methods were used for the intervention and comparison groups. Using a sample of over 30,000 families from 24 health authorities, Barker compared data collected on intervention families with data held by The National Society for the Prevention of Cruelty to Children. Definitions and guidelines for the reporting of child abuse and neglect could therefore be inconsistent. However, although this may
be considered a limitation, it is likely that more detailed information would reveal even higher rates of child abuse and neglect among groups and that the comparison would therefore be supported.

While this thesis is primarily concerned with professional home visiting to families at risk for parenting dysfunction and child maltreatment, there are a few published trials of non-professional home visiting programmes that are worthy of review due to their extensive evaluation and measurement of reducing child maltreatment. Although more limited in their extent, evaluative trials of volunteer programmes provide some evidence for success. Specifically, success has been demonstrated for programmes using non-professionals in universal programmes aimed at enhancing the wellbeing of children from families at social or economic risk. For example, Johnson et al., (1993) reported the use of non-professional volunteer community mothers to implement a child development programme to disadvantaged mothers in Ireland. Participants were selected on the basis of disadvantage measured by residence within a deprived area of Dublin, Ireland. A public health nurse visited all mothers and those randomised to the intervention group within the trial also received home visiting from a community mother. Experienced mothers from the same community were then used to provide a home visiting service to first time mothers. Health benefits for both mothers and their infants that received support from a community mother were demonstrated. Notably however, reduction of the incidence of child abuse and neglect was not reported.

Similarly the Home-Start programme in Britain (Harrison, 1981) where volunteer women offered support, friendship, and practical assistance to young families, appeared to have provided a range of benefits to families that received the service, although the research findings did not indicate any positive impact on reducing the incidence of child abuse and neglect. Home-Start is currently a widespread visiting service throughout the United Kingdom and its development would benefit from further, more rigorous evaluation. Previous evaluation of Home-Start was limited because researchers did not use prospective assessment of families, standardised measurements, naive assessors, or randomisation to comparison groups (Cox, 1993). Newpin was a similar home visiting programme that recruited
experienced mothers and employed them to home visit on a voluntary basis (Cox, Pound, Mills, Puckering, & Owen, 1991). Newpin was based on the Home-Start model, but was further developed to provide a particular focus on preventing child abuse and neglect. Neither consensus on the definition of child abuse and neglect nor accurate measurement of its incidence was achieved. Again, evaluation was limited and findings need to be interpreted with caution.

Efforts to establish the benefits associated with using professional nurses for home visiting interventions rather than lay visitors have been instigated (Olds, 1999). In Denver, Colorado home visitors with dissimilar qualities and educational backgrounds were used to replicate the Olds et al., (1986a, 1986b) model of home visiting to disadvantaged families. Maternal functioning and child health outcomes were compared between families visited by professional nursing graduates and families visited by women with high school diploma level of education referred to as ‘lay’ home visitors. Ongoing evaluation demonstrated statistically significant differences in both the impact on family outcomes and intervention implementation. Generally, maternal and child outcomes were better for families receiving nurse home visits and the results also indicated that compared with lay visitors, nurses: (a) completed more visits according to the schedule; (b) spent more time on health related issues; and (c) spent more time helping with competence and parenting issues (Olds, 1999). This study was novel in its approach and provides the first clear indication of better quality outcomes from professional nurse home visitation compared with lay visiting. Differences may be further explained with future analyses of the data and replication trials.

Existing Reviews of the Literature

Four major literature reviews have been published since 1993 that represent a comprehensive synthesis of the literature related to home visiting as a preventive and early intervention strategy for child abuse and neglect (MacMillan, MacMillan, Offord, Griffith, & MacMillan, 1994; Olds & Kitzman, 1993; Roberts, Kramer, & Suisa, 1996; Wekerle & Wolfe, 1993). Due to the diverse nature of the literature reviewed, Olds and Kitzman (1993) organised their review into five domains. Evidence for the effectiveness of programmes designed to: (a) prevent preterm
delivery and low birth weight infants; (b) improve health and development of preterm infants; (c) target the wellbeing of children from families at social or economic risk; (d) meet the needs of families with a disabled child; and (e) reduce government costs by improving well-being, was derived from their well designed review. Randomised trials testing the impact of prenatal home visiting were identified and found to have equivocal results in terms of either improving birth outcomes including prematurity and birthweight, or developmental outcomes and health. Nineteen randomised trials that examined programmes aimed at improving health and wellbeing of children born to low-income families were then divided into two groups for clarity. These grouped programmes aimed at: (a) improving children’s intellectual functioning; and (b) preventing maltreatment and problems with child health and behaviour. Fifteen studies examining the influence of home visiting programmes on children’s mental development were identified by the Olds and Kitzman review.

Of these fifteen trials, only six found significant overall benefits. Moreover, in two of the successful studies identified, differential dropout rates reduced the weight of the evidence presented. Despite a moderate influence on parental behaviour shown in four of the studies reviewed, no correlation with children’s intellectual functioning or development was shown. Olds and Kitzman (1993) highlighted the isolated nature of these findings and the need for them to be interpreted cautiously. Notably, the studies varied in implementation, staffing, and comprehensiveness, potentially influencing their effectiveness. Of the six studies that produced positive effects on children’s intellectual functioning, five used professionals or highly trained staff including nurses, teachers, and a psychology graduate student. Two programmes employed paraprofessionals. Interestingly, one was conducted in Africa where, as the authors note, levels of poverty and inadequacy of other community services may have influenced results. The second study testing the use of paraprofessional visitors was weakened by a significant attrition rate.

Six trials including Olds et al., (1986a, 1986b) own studies were identified in reviewing programmes targeting child abuse and neglect. Studies included in the review did not demonstrate overall reductions in the incidence of child abuse or
neglect, nor did a pattern emerge accounting for which programme characteristics reduced the rate of child abuse and neglect effectively.

MacMillan et al., (1994) conducted a systematic review of controlled trials evaluating programmes providing primary prevention for physical child abuse and neglect. Studies were included if the programme targeted children younger than eighteen years, and had the intent to prevent maltreatment or outcomes associated with maltreatment. Thirty three studies were identified, but only eleven studies were finally included for analysis. None of the eleven trials specifically demonstrated any effect in reducing physical abuse or neglect.

Another review of thirty four intervention studies spanning two decades reported that programmes providing an individualised approach to care were the most successful for parents considered at high risk for maltreatment (Wekerle & Wolfe, 1993). The analysis showed that interventions targeting maternal competence and parenting skills were successful in improving parent-child relationships and achieving modest gains in the promotion of child cognitive development and child behavioural competencies. Evidence for long term benefits however was limited, and the measurement of actual maltreatment such as child abuse reports were found to be unreliable. Numerous outcomes of child abuse and neglect were found across the studies so criteria used for measurement in the overview were: (a) reports of suspected or verified abuse; (b) hospitalisations; (c) rates of emergency room visitation; and (d) injury rates. The interventions identified included both perinatal and early childhood programmes. Wekerle and Wolfe identified that the most frequently tested intervention was home visiting and reviewed six controlled trials. In this review a scoring system was used to rate integrity of methodologies. The Olds et al., (1986a) trial received the highest score for sound methodology. Another high scoring controlled trial was the Hardy and Streett (1989) study. As in the Olds et al., (1986a) trial, home visiting commenced antenatally and extended to two years. However, the intervention differed because the visitor was a non-professional woman supervised by a social worker. The visitor’s role in Hardy and Streett’s study was characterised by crisis resolution through referral to appropriate agencies. Experience from the study demonstrated that family support in the home facilitated
effective parenting education. Measurement of child maltreatment revealed a positive programme effect on reducing the incidence of child abuse and neglect. In the home visited group, two instances (1.5%) of neglect or abuse occurred during the study period compared with 13 cases (9.8%) in the comparison group.

Roberts et al., (1996) sought to determine whether home visiting services reduce child injury and abuse and the investigators undertook a systematic review of studies that used random and quasi-random assignment method. An attempt was made to avoid publication bias by attempting to contact researchers whose trials did not demonstrate success. Consequently, the number of included studies was small, and vast differences were noted in their targeted populations, outcome measures (such as injury reported by parents as well as hospital records), and use of both professional and lay visitors.

Thirty three trials using random or quasi-random assignment, and involving at least one home visit in the postnatal period were identified. Eleven of the thirty three trials measured child injury, abuse, or both, for between groups comparison. Nine trials reported suspected or reported abuse and although four studies reported lower rates in the home visited group, five reported increased frequency in the intervention group. There was a possibility that increased surveillance of the home visited group resulted in higher report rates. Nevertheless, six of eight trials included in the review reported lower incidence of child abuse in the intervention group. This was a major finding of the Roberts et al., (1996) review as it suggested that home visiting programmes may reduce the risk of injury by up to 25%. However, as most studies reviewed used non-professional visitors it does not help to determine whether professional home visiting would have the same impact. Thus, evidence for the substantial preventive effect of home visiting on the rates of childhood injury is established in the literature as the Roberts et al., review demonstrates. However, it remains unclear how high-risk families can be successfully targeted, and whether lay or professional visitors are more effective.

Programme diversity has precluded formal meta-analyses of the literature and although the majority of studies included in the four major reviews focussed on high-risk groups, the manner of selecting participants varied from selection of members of
certain demographic groups to using questionnaires or checklists to assess eligibility. The structure and method of each of these four major reviews also differ. However, substantive and methodological conclusions can be drawn. Conclusions about the effectiveness of home visiting as a strategy for preventing child abuse or neglect are:

1. The multiple interacting systems that influence adjustment to the parental role require a comprehensive focus on multiple, rather than single factors related to dysfunctional parenting.

2. The establishment of an effective alliance between visitor and family requires regular and frequent visitation.

3. The home visiting strategy appears to be most effective when targeted to families with a range of characteristics placing them at risk for parenting dysfunction, child abuse, or neglect.

4. The effectiveness of home visiting in the prevention of child maltreatment is enhanced by the use of well-trained professional visitors.

5. Duration of intervention appears to be positively related to programme effectiveness in the prevention of child abuse or neglect.

Limitations Identified From the Literature Review

Despite the comprehensive nature of the studies reviewed, fundamental limitations can be identified. As this review has highlighted, the few high-quality evaluation studies have used models with dissimilar characteristics. Essentially these differences occurred in: (a) the frameworks used for identification of families at risk for child abuse or neglect; (b) the point at which families were recruited; and (c) the nature of the home visiting intervention. Furthermore, home visiting programmes varied in terms of who visited and what happened during the visits. The extent to which effectiveness of programmes relied on programme implementation and the training of visitors remains unclear. Accordingly, variable qualities of those who home visit has had an unknown impact on its effectiveness (Vimpani et al., 1996). According to Olds and Kitzman (1993), inadequate description of intervention, inadequate evaluation of how well the planned intervention was implemented, use of different measures to record and observe outcomes between intervention and comparison groups, overstatement of importance of disparate findings, differential
attrition rates between intervention and comparison groups, failure to theoretically blend programme aims and outcomes, and interpretation of effects that are of limited clinical significance are common methodological problems encountered.

Presently, the extent to which programmes prevent child abuse and neglect is difficult to determine because there are no standardised measures for maltreatment and definitions vary between studies. Further research is needed that attempts to address these limitations, particularly in the selection of families for whom home visiting can have a substantial preventive impact on poor adjustment to the parenting role, evidenced by rates of childhood injury and reports of maltreatment to protection agencies.

Intervention for families where child abuse has already occurred is often available and extensive, however tertiary intervention is difficult and expensive (Helfer & Kempe, 1976; Lynch & Roberts, 1982). At the same time, the need for experimental support for home visiting models of early intervention and prevention is also accentuated by their cost. With no evidence of “discernible patterns of program effect that might identify the types of at-risk families that are likely to benefit from home visiting programs more than others” (Olds & Kitzman, 1993, p. 81), cost effectiveness can be difficult to establish.

Finally, results from replication studies have indicated that effectiveness of home visiting programmes relied on availability of other community services. Consequently, the development, implementation, and evaluation of home visiting services need to be driven by local communities. Presently, Australia’s distinctive social, economic, and political context and health service structure calls for unique approaches towards increasing knowledge of efficacy and effectiveness of home visiting models.

Summary and Conclusions

The research reviewed has indicated that particular parent, child, and contextual factors increase poor adjustment to the parenting role, and child abuse and neglect, yet there is no clear evidence for deciding the most effective and appropriate preventive intervention. Home visiting by nurses and others as a strategy to strengthen and improve children’s environments has been promising. However,
evaluation of home visiting services and examination of families who are most likely to benefit from an intensive home visiting programme using child health nurses as case managers has received little attention in Australia.

The wider contexts from within which home visiting programmes operate are an important consideration since the success of home visiting may depend on the systems within which they operate. Thus, the overall aim of this study was to evaluate the effectiveness of home visiting as a prevention and early intervention for child abuse and neglect. More particularly, the study sought to address identified limitations within the literature with respect to home visiting. The specific aims were to assess:

1. The community utility of a screening tool used to identify families with child abuse or neglect risk factors in the immediate postnatal period.
2. The social validity of a home visiting programme using community child health nurses and offering social work services for families identified with child abuse or neglect risk factors.
3. The effectiveness of a home visiting programme using community child health nurses and offering social work services for families identified with child abuse or neglect risk factors.

A secondary aim was to examine factors measured in the immediate postnatal period associated with the mother, family, and the child’s environment that were predictive of:

4. Poor adjustment to the parenting role at 12-months and 18-months.
5. Delayed child development at 12-months.

In accordance with these aims, the hypothesis that the home visiting programme would be associated with more favourable adjustment to the parenting role compared with nonintervention, or clinic-based service delivery was tested. Specifically, the following research questions and hypotheses were put:

Firstly, would a screening instrument used during the immediate postnatal period to identify families with child abuse or neglect risk factors demonstrate community utility? This question was operationalised by measuring: (a) level of inclusion questionnaire return rate; (b) item refusal, that is, refusal to disclose
detailed information of personal, family, and environmental characteristics; and (c) external validity by way of comparing prevalence rates of disclosure for personal, family, and environmental characteristics with other studies.

Secondly, would a home visiting intervention programme beginning in the immediate postnatal period and targeted to families with child abuse or neglect risk factors demonstrate high social validity as reflected in terms of: (a) high participation rates; (b) high retention rates; and (c) high satisfaction rates? Thirdly, the hypothesis was tested that more favourable adjustment to the parenting role would be associated with a home visiting intervention programme compared with nonintervention or clinic based service provision only and would be evidenced by: (a) lower rates of maternal depression, parenting stress, and child abuse potential; (b) higher scores for home environment and parent-child interactions observed in the home; (c) higher levels of parental knowledge and practice of child safety and preventive healthcare; and (d) higher ratings of children’s cognitive, motor, and behavioural development at 12-months.

Fourthly, the hypothesis that maternal, family and environmental factors identified in the immediate postnatal period would be predictive of adjustment to the parenting role at 12-months and 18-months was tested. Finally, the hypothesis was tested that maternal, family and environmental factors identified in the immediate postnatal period would be predictive of children’s cognitive, motor, and behavioural development at 12-months.
CHAPTER 3

Introduction to the Study and General Method

The theoretical framework used for this study and considered in the thesis thus far integrated the theories of self-efficacy and human attachment into an ecological model of child development. This broad ecological framework provided an understanding of the systems within which parenting behaviours operate and was thus considered an appropriate structure from which to design the intervention programme and its evaluation. Hence, an ecological model of human development theoretically underpinned intervention aims, objectives, structure, and outcomes to be measured for evaluation.

One caveat to the programme evaluation's use of an ecological framework was the exclusion of fathers from the assessment of adjustment to the parenting role. This was not intended to imply that father's adjustment to parenting is insignificant. Indeed, postnatal needs of fathers are an important and necessary part of comprehensive service delivery. Developing their skills and knowledge may prevent the emergence of dysfunctional parenting behaviours that lead to child abuse and neglect. However, the intervention programme did not specifically address the father's needs. Future research is required to identify the way in which home visiting programmes can effectively do so during their adjustment to the parenting role (Vimpani et al., 1996). Analysis of gender differences in the experience of adjusting to the parenting role was beyond the scope of this study, but is recommended as a priority for future research.

Participants

One hundred and eighty one women with newborns were initially enrolled to participate in the randomised-controlled trial designed to test hypotheses advanced by this thesis. Women were recruited from the Royal Women's Hospital Brisbane, a major urban teaching and tertiary referral hospital in Queensland between 11 January 1996 and 9 September 1996. Women were selected for inclusion to the study on the basis of two criteria sets. Women in the immediate postnatal period were approached personally to consent to participate where: (a) they had at least one liveborn infant
and would parent that infant upon discharge; (b) they were literate and able to complete questionnaires in English with some assistance if required and; (c) they planned to reside in the community serviced by the Royal Children's Hospital and District Health Service, Community Child Health Service.

One thousand and seventy women were identified as eligible on the basis of this first criteria set. However, for 62 (5.8%) of these eligible women there was no opportunity for interview in the immediate postnatal period. An important consideration during recruitment of women to the project was provision of privacy during the process of disclosure of sensitive issues such as domestic violence and childhood abuse. Consequently, some women were missed due to presence of a partner or others, and other women were missed because of expeditious discharge from hospital. Specifically, thirty nine (approximately 4%) were unable to be interviewed and 23 (2%) were excluded because of limited literacy skills.

Of the 1008 inclusion questionnaires distributed, 636 (63.09%) were completed and returned. Of these respondents, almost three-quarters 463 (72.8%) gave written consent to participate in the longitudinal trial. Where written consent was obtained, a second inclusion criteria set using a two-tier system of risk ranking was used for selection to the study. The first tier included: (a) sole parenthood; (b) ambivalence to the pregnancy (sought termination, no antenatal care); (c) physical forms of domestic violence; and (d) childhood abuse of either parent. Respondents reporting any one or more of these four risk factors were selected for the study. The second tier included less definitive risk factors and respondents self-reporting three or more of the following risk factors were also selected: (a) maternal age less than 18 years; (b) unstable housing (3 or more moves in 2 years, homelessness); (c) financial stress (often concerned about enough food or making ends meet); (d) less than 10 years of maternal education; (e) low family income (<$16000 per annum); (f) social isolation; (g) history of mental health disorder (either parent); (h) alcohol or drug abuse; and (i) domestic violence other than physical abuse.
Table 2

Sociodemographic Profile of Participants (N = 181)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>%</th>
<th>Characteristic</th>
<th>%</th>
<th>Characteristic</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range</td>
<td></td>
<td>Marital status</td>
<td></td>
<td>Family income</td>
<td></td>
</tr>
<tr>
<td>15-17 years</td>
<td>6.6</td>
<td>Single</td>
<td>29.4</td>
<td>&lt;$9000</td>
<td>13.2</td>
</tr>
<tr>
<td>18-24 years</td>
<td>31.5</td>
<td>Married</td>
<td>41.1</td>
<td>$9001-$16000</td>
<td>34.7</td>
</tr>
<tr>
<td>25-41 years</td>
<td>61.9</td>
<td>Defacto</td>
<td>17.8</td>
<td>$16001-$26000</td>
<td>27.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Separated</td>
<td>7.8</td>
<td>$26001-$50000</td>
<td>22.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Divorced</td>
<td>3.9</td>
<td>&gt;$50000</td>
<td>1.8</td>
</tr>
<tr>
<td>Maternal parity</td>
<td></td>
<td>Ethnicity</td>
<td></td>
<td>Educational level</td>
<td></td>
</tr>
<tr>
<td>Primiparas</td>
<td>43.6</td>
<td>Australian born</td>
<td>77.3</td>
<td>12 years or more</td>
<td>41.1</td>
</tr>
<tr>
<td>Multiparae</td>
<td>56.4</td>
<td>Born overseas</td>
<td>22.7</td>
<td>10 years or less</td>
<td>37.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7 years or less</td>
<td>20.0</td>
</tr>
<tr>
<td>Sole parent</td>
<td>40.1</td>
<td>Aboriginal or TSI</td>
<td>5.6</td>
<td>Special school</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Table 3  
*Risk Factor Profile of Participants (N = 181)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No social support</td>
<td>8.0</td>
</tr>
<tr>
<td>Sought termination during pregnancy</td>
<td>11.1</td>
</tr>
<tr>
<td>Parental history of psychiatric illness</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>25.0</td>
</tr>
<tr>
<td>Partner</td>
<td>8.5</td>
</tr>
<tr>
<td>Maternal history of postnatal depression</td>
<td>19.3</td>
</tr>
<tr>
<td>Parental history of childhood abuse</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>33.3</td>
</tr>
<tr>
<td>Partner</td>
<td>16.0</td>
</tr>
<tr>
<td>Family income below $26 000 p.a.</td>
<td>75.4</td>
</tr>
<tr>
<td>Maternal drug use</td>
<td></td>
</tr>
<tr>
<td>Marijuana</td>
<td>20.0</td>
</tr>
<tr>
<td>Amphetamine</td>
<td>5.0</td>
</tr>
<tr>
<td>Benzodiazepine</td>
<td>4.0</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>20.0</td>
</tr>
</tbody>
</table>
On the basis of this system of risk-ranking 39.1% (N = 181) of consenting respondents were selected and randomly assigned either into the intervention group (n = 90) or comparison group (n = 91). Sociodemographic information of selected participants is presented in Table 2 and risk factor criteria are presented in Table 3.

While the sociodemographic profile of all respondents to the inclusion questionnaire approximated AIHW’s national perinatal statistics data for 1995 (Day et al., 1997), the profile for selected participants was not representative overall. The participant profile was influenced both directly and indirectly by the purposive sampling method. Selection of teenaged, disadvantaged, and sole parents to the project led to an overrepresentation of these mothers. For example, the study sample mean maternal age of 26.2 years (SD = 5.86) was younger than average for women giving birth in Australia where mean maternal age gradually increased from 27.9 years in 1991 to 28.4 years in 1995. More specifically, 15.6% of participating mothers were younger than 19 years old, whereas the national proportion of teenage confinements was 5.3% nationally in 1995. Likewise, 39.2% of study participants were sole parents whereas 11.5% of confinements were to sole parents in Australia during 1995.

Other sociodemographic variables were influenced indirectly by selected inclusion into the study. For example, AIHW’s data for parity, that is the number of previous pregnancies resulting in live or still births, showed 39.8% of mothers in 1995 were having their first baby, while the proportion was slightly higher in this study. Likewise, 5.6% of the sample in this study identified as Aborigine or Torres Strait Islander, representing a slightly higher proportion than the 5.2% of confinements to Queensland Indigenous women in 1995 (Day et al., 1997). Parity and identification as Aborigine or Torres Strait Islander were not used specifically for inclusion to the project and the higher proportion may be explained by rates of young and Indigenous mothers experiencing poverty, domestic violence, and sole parenthood in Queensland. Note that the definition used by this study for Aboriginal was that of the Department of Aboriginal Affairs, Constitutional Section 1981, used by AIHW (Day et al., 1997, p. 107) where “aboriginality is determined by the
person’s self-identification” and where the person “... is accepted as such by the community with which he or she is associated”.

Although purposive sampling influenced the sample profile as described, key sociodemographic variables were consistent with national data. Low infant birthweight is an important indicator of inequitable child health status. In this study, the same proportion of infants with low-birthweight of less than 2500 grams (6.4%) were born to participating families as recorded in Australian national datasets for 1995 (Day et al., 1997). Likewise, maternal country of birth appears to be an important determinant of a range of child health outcomes in Australia and the proportion of mothers born overseas in this study was representative of national data (Australian Bureau of Statistics, 1992). Thus, the sampling method used to select participants on the basis of risk for child abuse, neglect and other forms of maltreatment influenced sociodemographic characteristics used by the study to identify risk either directly or indirectly. Importantly however, variables not used for inclusion to this study but known to influence child health outcomes were represented in concordance with national data.

Between recruitment to the randomised-controlled trial in the immediate postnatal period and 12-month follow up, over three-quarters of the original sample (76.24%) was retained. Of the home visiting programme group, 68 (75.5%) completed compared with 70 (76.9%) of the comparison group. It may be noted here that the purpose of the study was to test clinically significant change corresponding to moderate to large effect sizes for the measures tested and described forthwith. Thus, using Cohen’s (1992) formulae for significance levels less than 0.05, to achieve power of 0.8 with a moderate effect size, the minimum sample required of 64 subjects per group was exceeded. The design, therefore, afforded sufficient power to adequately test the hypotheses.

Recruitment Measures

Inclusion Questionnaire

The 29-item inclusion questionnaire specifically developed from both the literature and expert opinion to select participants for recruitment to this study is
presented in Appendix A. Variables measured by the inclusion questionnaire included maternal age, parity, marital status, ethnicity, family income, and maternal education level. Parity referred to the state of having borne children, that is, either first time mother (Primiparous) or experienced mother (Multiparous). Gross family income categories were derived from surveys of income conducted by the Australian Bureau of Statistics (Castles, 1989). Marital status was not considered a reliable indicator of family structure inasmuch as married couples may live separately and single women may not live alone. Thus the question “are you a sole parent” was included as well as marital status.

Sociodemographic variables and risk factors for child abuse, neglect, and parenting dysfunction were included. Two dimensions related to maternal ambivalence to the present pregnancy. The first dimension measured ambivalence by asking whether termination of the pregnancy had been sought. The second dimension measured compliance with recommended antenatal care attendance. Questions relating to substances abuse, domestic violence, and childhood abuse were developed from the literature (Health Services Working Party of the Domestic Violence Council, 1991; Jones & Schechter, 1992; Nevada Office of the Attorney General, 1994). A variable was composed for domestic violence from seven dichotomous items of the inclusion questionnaire. These items were included in the question “Do you experience any form of abuse from a partner or family member at home such as: (i) physical abuse; (ii) damage to your property; (iii) verbal abuse; (iv) threats to hurt you; (v) allowed no money; (vi) being kept away from family or friends; and (vii) other (please specify)”. The sum of these 7 items was subtracted from 14, earning a potential range from zero to seven (forms of violence experienced). Thus, the inclusion questionnaire was designed specifically for this study when a comprehensive literature search failed to locate a suitable standardised measure. Following is an outline of the way this questionnaire was developed for use.

Inclusion questionnaire development. Characteristics common to families identified as at risk for child abuse and neglect served as the basis for this screening questionnaire (Browne and Saqi, 1988). Therefore, to ensure that items would be relevant and comprehensible to participants, an initial pilot test was undertaken at the
hospital within which the main study was to be conducted. A group of 43 women completed the questionnaire in the postnatal period. After some revision, more items were included on the questionnaire to improve clarity and reliability. The inclusion questionnaire was then found to be relevant and comprehensible to women and was further tested for acceptability and validity prior to the main study’s inception. Twenty-nine (67.4%) women who participated in the first pilot test indicated they would be interested in continuing to participate in a randomised controlled trial of home visiting if requested.

A second pilot study involving 10 women in the immediate postnatal period was conducted to test reliability of the revised questionnaire. Eight women completed the two interviews set one week apart using the revised questionnaire that demonstrated 100% test–retest reliability. It was intended that the self-report questionnaire may be used to structure an interview if necessary, however, neither of the two women identified as illiterate was interested in participating in the pilot study. Thus, the questionnaire was not tested for use as a guide for structured interview in the pilot studies.

**Recruitment Procedure**

A child health nurse who provided verbal explanation of the project approached eligible women. This nurse gave a written explanation of the aims of the project, consent to participate form (presented in Appendix B), and the inclusion questionnaire during the immediate postnatal period. Women who did not wish to participate in the longitudinal study were offered the opportunity to participate by completing the inclusion questionnaire only. Women who returned the inclusion questionnaire with written consent to participate in the longitudinal study, but did not meet inclusion criteria were sent a letter of thanks for their interest and an outline of community child health services available in their community (Appendix C). Given that women not wishing to consent to the longitudinal study responded to the inclusion questionnaire, demographic, psychosocial, and socioenvironmental variables were tested for differences between responses from women who gave consent to participate in the longitudinal trial and those who did not.
Figure 1. Recruitment, random allocation, and retention to controlled trial of home visitation by nurses targeting high-risk families with newborns.

Eligible women (N = 1070) \rightarrow \text{Questionnaires distributed (1008)} \rightarrow \text{Returned inclusion questionnaire (n = 636)}

\[\begin{align*}
\text{Consent to participate} &\quad (n = 463) \\
\text{No consent to participate} &\quad (n = 173)
\end{align*}\]

\[\begin{align*}
\text{Sole parent (15.8\%)} \\
\text{Ambivalence (4.8\%)} \\
\text{Domestic violence (0.17 (0.71))} \\
\text{ Childhood abuse} \\
\quad \text{- Self (12.9\%)} \\
\quad \text{- Partner (6.1\%)} \\
\text{Sole parent (12.7\%)} \\
\text{Ambivalence (2.5\%)} \\
\text{Domestic violence (0.06 (0.33))} \\
\text{ Childhood abuse} \\
\quad \text{- Self (10.2\%)} \\
\quad \text{- Partner (7.3\%)}
\end{align*}\]

\[\begin{align*}
\text{Age < 18 years (2.8\%)} \\
\text{Financial stress (2.58 (1.08))} \\
\text{Income < $16000 pa (22.2\%)} \\
\text{Limited education (13.2\%)} \\
\text{Social isolation (5.3\%)} \\
\text{Alcohol / drug use (3.6\%)} \\
\text{Psychiatric illness (15.2\%)} \\
\text{Post natal depression (14.2\%)}
\end{align*}\]

\[\begin{align*}
\text{Three or more of these variables} \\
\text{Included into trial} &\quad (n = 181)
\end{align*}\]

\[\begin{align*}
\text{Intervention} &\quad (n = 90) \\
\text{Comparison} &\quad (n = 91)
\end{align*}\]

\[\begin{align*}
\text{Retained to 12-months} &\quad (n = 68) \\
\text{Retained to 12-months} &\quad (n = 70)
\end{align*}\]
A computer-generated set of random numbers was then used to randomly allocate consenting, eligible women into either the intervention group or the comparison group. To eliminate the potential for bias, randomisation was conducted by an administrative assistant who was naive to the identity and risk-rating analysis of respondents to the inclusion questionnaire. This person was not involved in the home visiting programme or data collection activities. Figure 1 presents an outline of the recruitment design and participation details.

After the random group allocation procedure, each participant was contacted to arrange a home visit for baseline data collection. A research assistant naive to intervention status and not involved in providing care or support to families collected data. At the preliminary home visit for baseline data collection, the research assistant reiterated the study’s purpose, aims, and its importance to the community. Participants were informed that data would be collected before, during, and after implementation of the intervention and reminded that they could withdraw at any time without prejudice.

**Evaluation Measures**

**Child, Parent, and Family Domains**

**Parent/family function.** The Edinburgh Postnatal Depression Scale (EPDS) was completed by participants in the immediate postnatal period (baseline) prior to programme commencement and repeated at infant ages 6-weeks and 12-months. The EPDS was developed to screen for postnatal depression in community settings and has been validated on community samples at 6-weeks postpartum (Cox, Holden, & Sagovsky, 1987). Studies conducted in both Britain and Australia have demonstrated high acceptability to women in the postnatal period (Boyce, Stubbs, & Todd, 1993; Murray & Carothers, 1990), and a strong association between elevated scores in the immediate postnatal period and 6-weeks postpartum (Hannah et al., 1992). Moreover, the EPDS has demonstrated both sensitivity and specificity as a screening tool for depression in non-postnatal women (Cox, Chapman, Murray, & Jones, 1996).
Each of the 10 self-report items of the EPDS provided a choice of four responses to questions related to symptoms common to postnatal depression. Symptoms of anhedonia and reactivity, self-blame, anxiety, coping, panic, insomnia, sadness, tearfulness, and self-harm were measured. Responses were scored from 0 to 3 according to extent of experience. Sensitivity, specificity, and positive predictive values of EPDS scores have been studied and a threshold of 12.5 found optimal (Murray & Carothers, 1990). At this threshold, sensitivity of the EPDS was 95.7%, specificity 81.1%, and positive predictive value 43%, when using the Standardised Psychiatric Interview (Goldberg, Cooper, Eastwood, Kedward, & Shepherd, 1970) to gain a Research Diagnostic Criteria diagnosis of major depression (Spitzer, Endicott, & Robins, 1975). The EPDS in the present study was used to measure the severity of symptoms over time, rather than to imply the presence of a particular disorder, although there is a strong relationship between early postpartum mood and postnatal depression (Hannah et al., 1992). Thus, women scoring above the clinical threshold in the present study were offered referral to a general medical practitioner of their own choice for further assessment as recommended by Holden, Sagovsky, and Cox (1989).

Parent domain (PD) and child domain (CD) subscales of the Parenting Stress Index (PSI) developed by Abidin (1990) were used to measure the degree of stress experienced in the role of parent. Items on both the PD and CD scales rate on a five-point Likert scale, which determines the extent to which parents agree with statements presented. The PD consists of 54 items that measure parent depression, unhappiness and guilt, parent attachment to the child, perception of restrictions imposed by parenting role to the parent’s freedom and maintenance of freedom, sense of parenting competence, social isolation, relationship with spouse, and personal health. The CD consists of 47 items which measure parental perception of child adaptability, acceptability of child to parent, child demandingness and degree of bother, parental perception of child mood, child distractibility and activity, and child reinforcement of parental self-esteem.

The PSI was completed by participants at baseline and repeated at infant ages 6-weeks and 12-months. Because normative data for the PSI were based on a sample
of parents whose children ranged in age from 1 month to 12 years (Abidin), it was decided that selected CD scales would be used at 6-weeks, and that all CD scales would be measured at 12-months. Selected CD scales used at 6-weeks were: (a) acceptability of child to parent; (b) child demandingness and degree of bother; (c) parental perception of child mood; and (d) child reinforcement of parental self-esteem scales. Items for parental perception of child adaptability, and child distractibility and activity scales were excluded from analysis until 12-months on the basis that they related predominantly to older children. Adding parent and child PSI domains calculated total parenting stress scores at 12-months.

Child abuse risk. Due to the relative low incidence of, and difficulty in measuring child abuse and neglect, beliefs associated with parental maltreatment of children were measured using the CAPI (Milner, 1986) at baseline, 7-months, and 18-months follow-up. The questionnaire, which was developed for use as a screening tool to identify individual risk for physical child abuse potential, contained 160 items in an agree/disagree format. Seventy seven items randomly distributed throughout the questionnaire comprised a child abuse potential subscale. In addition, three validity scales; the lie, random response, and inconsistency scales, have been rigorously tested (Milner, 1986). Because there is a modest but consistent relationship between lie scale scores (measuring attempts to respond with socially acceptable answers) and education, a lie scale cut off score of 8 was used for those with less than twelve years of formal education in the present study. For those with higher education levels, a lie scale cut off score of 7 was used in the present study. Where the faking good index was elevated when the abuse score was elevated, the abuse score was still used in this analysis. Milner’s research suggests that when this interpretation is used, overall classification rates remain the same or increase, and that there are fewer invalid and unusable scores.

The CAPI has been extensively tested, and there is evidence for its reliability (Milner, 1986; Milner, 1994), construct validity (Milner, 1994) and predictive validity (Milner, Gold, & Wimberley, 1986; Milner, Gold, Ayoub, & Jacewitz, 1984). A highly significant predictive relationship has been shown between CAPI scores and subsequent physical abuse reports (Milner et al., 1984). Moreover, the
CAPI distinguishes individuals who have difficulty in interpersonal relationships including intrafamilial relationships and these people as parents may experience high levels of stress related to parenting (Milner, 1994). Similarly, the CAPI is correlated positively with measures of psychological distress, and inversely with psychological wellbeing, as measured with the Mental Health Index (Milner, Charlesworth, Gold, Gold, & Friesen, 1988).

Importantly, extensive research has been conducted to test both its concurrent and future predictive validity. Most studies reporting misclassification rates, that is, number of false positives and false negatives, report more false negatives than false positives and classification rates vary depending on risk status of the samples. Specifically, discriminant analysis for perpetrators of physical child abuse and matched comparisons has provided correct initial classification rates in the 90% range (Milner & Wimberley, 1980) whereas classification rates of 85% to 95% have been found in more diverse populations (Milner et al., 1986). Further, classification rates of 100% have been reported for low-risk, nurturing, and nurturing foster mothers (Milner, 1994).

The Milner et al., (1984) prospective study found a highly significant predictive relationship between CAPI abuse scale score and subsequent physical abuse reports when a sample of 200 parents at risk for child abuse and neglect were tested over time. In this study, Milner et al., reported: (a) a significant relationship between abuse scores and physical child abuse (Cramer’s $V = .34$); (b) a significant but modest relationship between abuse scores and child neglect (Cramer’s $V = .19$); and (c) no significant relationship between abuse scores and development of infant failure to thrive (Cramer’s $V = .12$) indicating specificity of its use for predicting physical child abuse. The majority of parents with elevated abuse scale scores in the Milner et al., study did not go on to abuse their children during the study period. However, each parent who did go on to abuse their child had scored an elevated abuse score.

The CAPI has been used to evaluate a number of child abuse prevention programmes and appears to be sensitive to treatment effects where programmes have aimed to reduce child abuse potential. However, further study is required to establish
the relationship between post-treatment abuse scale scores and subsequent perpetration of physical child abuse.

**Home environment.** The 45-item semi-structured observation/interview infant version of the Home Observation for Measurement of the Environment (HOME) Inventory was used to measure level of developmentally simulating experiences available for the child and overall quality of the home environment from a developmental perspective at infant ages 6-weeks and 12-months (Caldwell & Bradley, 1984). The HOME Inventory is a standardised measure of quality of the home environment using binary choice items clustered into six subscales of parental responsivity, acceptance of child, organisation of the environment, play materials, parental involvement with the child and variety in stimulation.

Maternal interactions, stimulation, and home safety standards were observed and measured in participating family homes where natural behaviour between parent and infant could be observed. Parents (usually, but not exclusively the mother) were engaged in conversation about the infant’s routines, family activities, and behaviour patterns to gain as accurate a description of the home environment as possible (Bradley & Brisby, 1990).

The HOME Inventory is a measure with demonstrated interrater and internal reliability (Caldwell & Bradley, 1984). In the present study, interrater reliability was checked by having two research assistants trained in the infant version of the HOME Inventory visit 38 (28%) homes at the same time at 12-months. Each made an independent assessment on the basis of the assessment during which home environment and home safety standards were observed. Correlations between scores obtained from the independent observers, calculated for each of the HOME Inventory subscales were: (a) .79 (emotional and verbal responsivity to infant); (b) .77 (acceptance of infant behaviour); (c) .80 (organisation of environment); (d) .95 (provision of appropriate play materials); (e) .87 (parental involvement with infant); (f) .93 (variety in daily stimulation); and (g) .93 (total HOME score). These high correlations indicate adequate reliability consistent with previous studies (Caldwell & Bradley).
Child health. The 30-item self-report questionnaire developed to examine parental knowledge and practice of preventive infant health care at infant age 6-weeks is presented in Appendix D. Items related to infant nutrition including plans to breastfeed, feeding at time of leaving maternity hospital, current feeding, reasons for weaning, and an open-ended question were included to assess plans for introduction of solids. An independent researcher observed feeding at time of data collection.

Knowledge and practice of SIDS preventative strategies were assessed. Babies sleeping position and site, family smoking habits and house rules, and maternal knowledge of risk factors were measured by the self-report questionnaire and a researcher observed in-house smoking behaviour. The question: “How do you think the risk of cot death can be reduced? Please write down three ways that you think parents can help”, assessed maternal knowledge of preventive behaviours. Possible scores ranged from +3, representing three appropriate measures (such as sleep site, sleep position, smoking behaviour, breast feeding, or not overheating the child) to -3 representing inappropriate and potentially dangerous answers (e.g. don’t immunise, keep the baby extra warm). Hospital admissions, medical service attendance, and other community services attendance were also reported on the questionnaire.

The 28-item 12-months child health questionnaire developed to examine parental knowledge and practice of preventive childcare is presented in Appendix E. Items measuring parental distress related to childhood feeding and sleeping variants were included in this questionnaire. Parental perception of their own child’s eating and feeding behaviour was measured using a 10-point scale from “no problem” to “major problem”. Similarly, participants were asked to rate perception of their own child’s sleeping pattern using a 10-point scale from “no problem” to “major problem”. Health care attendances and questions relating to substances abuse and domestic violence were repeated to measure changes in behaviour and family environment over time. A scale was created from the addition of 6 dichotomous items subtracted from 12 so that a score of 6 indicated age appropriate immunisation to 12-months whereas a score of 0 to 5 indicated incomplete immunisation to 12-months.
Child development. Trained research assistants measured child development at 12-months using Bayley Scales of Infant Development (Bayley, 1993). The scales yield a mental development index and a psychomotor development index, which assess the child's current level of cognitive, language, personal-social, and fine and gross motor development. In addition, a behaviour rating scale assesses the child's behaviour during testing. Scales have been standardised on American samples of children to provide current normative data on infants from one month to 42-months of age. For this study, children ranged in age from 12 to 16 months as calculated by subtracting the birth date from the date of testing and corrected where necessary for prematurity. Index scores were calculated from the raw scores of both the mental scale and the motor scale and percentiles were calculated from the raw scores for total behaviour rating scores. These scores were then used to test group differences.

Service Satisfaction. Participant satisfaction with the intervention programme was measured and compared with comparison group satisfaction for standard child health services at infant age 6-weeks. An instrument developed for planning, administration, and evaluation of health service delivery programmes was adapted for use in this study (Ware, Snyder, Wright, & Davies, 1983). The Patient Satisfaction Questionnaire – III (PSQ – III) was originally developed with 80 items measuring seven dimensions of satisfaction with medical care (Ware, Snyder, & Wright, 1976a; Ware, Snyder, & Wright, 1976b). These dimensions were general satisfaction, technical quality, interpersonal manner, communication, financial aspects, time spent, and accessibility and convenience. A short-form of this instrument that measures each dimension (Marshall & Hays, 1994) was adapted for the present study by replacing ‘doctor’ with ‘child health nurse’ as the need for brevity precluded use of the full length version. Measures of technical quality and financial aspects were excluded, using only the statements for communication, convenience, interpersonal manner, general satisfaction, and time spent. Overall satisfaction was calculated by addition of these five subscales. A five point Likert response format ranging from strongly agree (= 1) to strongly disagree (= 5) was used for each scale.
<table>
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<tr>
<th>Domain</th>
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<th>How Measured</th>
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<td>Parenting Stress Index</td>
<td>120 item self-report</td>
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<td>Psychometric properties established</td>
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<td></td>
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<td>Parent questionnaire</td>
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<td>behavioural development</td>
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Evaluation Procedure

Following recruitment, random allocation to group, and baseline data collection, parents were contacted by telephone to arrange home visits for data collection and home environment assessments according to the schedule presented in Table 4. Instruments were completed by participants in their homes during these home visits for data collection. Thus, measures were taken at the same time and in the order of child health, service satisfaction, parent/family function, and child abuse risk potential. Forms were completed by participating mothers with minimal assistance for clarification when necessary. This thesis presents results for outcomes measured at baseline, infant age 6-weeks, 12-months, and 18-months only.

Measures were selected on the basis of proven reliability, clinical significance, and predictive validity to evaluate the intervention programme. Recognising the limitations of a sample of this size to detect differences in low incidence outcomes such as child abuse, neglect, or SIDS, outcome measures were chosen for their demonstrated relationship to longer-term outcomes. Thus, a range of instruments was used to measure infant, maternal and family health outcomes and satisfaction with the intervention programme. As home visitation by nurses is common in the targeted health district, blindedness was maintained until the six-week assessments when many participants disclosed their intervention status. New research assistants were therefore trained and employed for the 12-months follow-up.

Home Visiting Intervention Programme

Content

The home visiting programme that was offered to families allocated to the intervention group was designed as a prevention and early intervention strategy for mediating risk for child abuse, neglect, and poor adjustment to the parenting role. Development of a strong commitment to the infant’s wellbeing and development is thought to reduce levels of parental anxiety and stress influencing preventive behaviours, improved parent-infant attachment, and nurturant behaviours towards
children, reducing the risk for child abuse and neglect (Leventhal, 1996). As such the programme aimed to:

1. Establish, develop, and sustain a trusting relationship between home visiting nurses and families.

2. Reduce family stress and maternal depression.

3. Enhance self-efficacy (or the parent's belief that they parent effectively).

4. Promote social contacts, social integration, and involvement in community activities.

5. Optimise secure parent-infant attachment and stimulate parent-child interaction.

6. Provide support and information to promote positive health care, safety, and preventive behaviour of parents for their infants.

Recognition of the complex interaction between ideological, ethical, conceptual, professional and organisational obstacles to effective teamwork led to implementation of a model integrating the skills and knowledge of a team of clinicians from the disciplines of medicine, nursing, and social work. Figure 2 presents a diagrammatic representation of the interdisciplinary model. Figure 2 shows that although the home visiting nurses aimed to develop a trusting relationship with families, the relationship was primarily established with mothers. The absence of fathers in this model was in no way meant to imply that maternal variables were recognised as the only factors to be targeted in developing a supportive environment for children's well-being and safety. Rather, the emphasis on mothers developed from a transposition of the tenets of an existing model of home visiting which recognised the crucial need for further research into the staffing and context of home visiting programmes required to meet the needs of male partners. Nonetheless, fathers were engaged in activities of the programme where possible and the father's role was supported and valued by home visiting nurses.

Two child health nurses were employed full-time to undertake home visits and another hospital-based child health nurse was responsible for recruitment to the project and referral of families to clinic-based child health and other community services. Another community child health nurse was available for staff relief when
required. At this point it is worth noting the skills, knowledge, and ability of the nurse visitors as these factors can determine how well preventive programmes are delivered and how well families needs are met (Wasik, 1993). The visiting nurses (including the relief nurse) were selected on the basis of their experience of working with high-risk families in a community context. Each nurse had general nursing, midwifery and child health nurse qualifications but did not hold a baccalaureate degree in nursing or any other health related discipline.

A social worker provided social work intervention in the home for families where parental conflict or maternal ambivalence was reported and where parents requested counselling for issues related to their own abusive childhood. The social worker provided an extension of the nurses' home visiting by using a family therapy approach. Six parent aides were employed, trained, and supervised by another social worker to provide weekly assistance on a short-term basis to families requiring intensive assistance with parenting. A community paediatrician with expertise in child protection coordinated the intervention programme team. The community paediatrician assessed families referred to an outpatient clinic, home visited in acute situations, provided medical attention where required, and facilitated access to child protection services when necessary.

As previously outlined, the home visiting programme aimed to both reduce parental stress and child abuse potential. Strategies described forthwith potentially ameliorate parental anxiety and stress. However, as we have seen, the nature, incidence, and interaction of factors associated with poor adjustment to the parenting role varies within and between families. That is to say that each family presented with unique needs for services provided by this home visiting programme, and therefore a flexible, negotiated programme was offered. Regular, weekly case conferencing was aimed at encouraging discourse, reflection, and mutual information sharing. Interdisciplinary assessment, planning, and evaluation of programme strategies took place at these weekly meetings. Importantly, this interdisciplinary model of home visitation allowed home visiting nurses to coordinate an array of community services to which families could be referred.
Figure 2. Home visiting model linking interdisciplinary programme strategies.

Mother

Baby

Child Health Home Visiting Nurse

- Trusting relationship focussed on building resilience to risk for parenting dysfunction

Intervention Programme Team
- Liaison nurse
- Home visiting nurses
- Paediatrician
- Social worker
- Parent aides

Wider Community Services for Families with Children
Establishing, developing, and sustaining trust. The relationship established between nurse and mother was considered a crucial element of the programme since creation of an empathic relationship with mothers can result in improved self-efficacy and mood states (Leventhal, 1996). Thus, the home visiting programme was planned to begin as early as possible in the immediate postnatal period, with visits offered frequently enough so that visiting nurses could get to know the family, and develop a relationship of trust. A nonjudgmental and consistent approach by the nurse, patience, respectful use of positive incentives and praise, and listening skills were used to promote both self-esteem and trust.

The opportunity for collaborative decision making between parents and visitors, and encouragement of family participation in making decisions related to infant health and development aimed to influence perceptions of, beliefs about, and attitudes towards appropriate parenting responses. For the community child health nurses this presented a shift in approach from traditional child health supervision towards development of a partnership with parents wherein collaborative decision making, self-care and independence were emphasised.

Enhancing self-efficacy. Self-efficacy theory was central to the theoretical underpinnings of the home visits, and was reflected in an emphasis on helping parents (principally mothers) set small achievable goals for behaviour change which, if successful, would increase their confidence and produce enduring changes in behaviour. For example, mothers who acknowledged that breastfeeding is nutritious and valuable for the baby, and beneficial for their own health (an outcome expectation), wished to breastfeed their infant, but had no confidence in their own ability to breastfeed successfully (an efficacy expectation) would be visited frequently to confirm the success of breastfeeding attempts and provide opportunity for discussion. Mothers who already undertook health promoting and preventive health behaviours were commended and supported in their efforts, and emphasis was placed on accomplishments.

Individual performance accomplishments were highlighted and this was considered the strongest source of efficacy information, however verbal persuasion was also used to guide and reinforce preventive health behaviours demonstrated by
parents. Verbal persuasion took the form of nurses reassuring parents that they were coping and managing their baby’s cares.

**Fostering the early attachment relationship.** Strategies aimed at promoting parent-infant attachment were based on a framework for promoting parental enjoyment of infants and older children. Nurse visitors provided information on child health and development to help parents anticipate normal childhood behaviours and development, their expectations of, and preparations for, developmental and behavioural variants (Appendix F). Specifically, individual instruction was undertaken that aimed to provide:

1. Realistic child-behavioural expectations.
2. An understanding of key developmental behaviours such as separation protest and crying behaviour.
3. Perspective taking (seeing through the eyes of the child).

**Promoting preventive health behaviours.** Next, the home visiting nurses aimed to improve parental adoption of health promoting behaviours and promote positive parenting practices. Thus, the educational component of visiting focussed on increasing knowledge and understanding of preventive health behaviours, as well as the influence of particular behaviours promoting children’s health and development. Families were actively engaged in information sharing. Family health issues used to frame health education components are presented in Table 5.

**Safety.** In addition to the health education component of the programme, appropriate parenting responses to the potential for frustration and anger related to parenting were addressed in an attempt to prevent the escalation of such feelings. Unusual bruises or marks on infants were discussed with the family to provide for an accurate assessment of the injuries. Signs of spousal abuse were also discussed where they were reported or observed. Being familiar with family interactions and reactions assisted in this role. Use of case conferencing and appropriate referral were essential components of the interdisciplinary approach in these instances.
<table>
<thead>
<tr>
<th>Intervention Focus</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipatory Guidance</td>
<td>Maternal health care</td>
</tr>
<tr>
<td></td>
<td>Maternal mood changes</td>
</tr>
<tr>
<td></td>
<td>Contraception</td>
</tr>
<tr>
<td></td>
<td>Infant behaviours</td>
</tr>
<tr>
<td></td>
<td>a) Feeding</td>
</tr>
<tr>
<td></td>
<td>b) Crying</td>
</tr>
<tr>
<td></td>
<td>c) Sleeping</td>
</tr>
<tr>
<td></td>
<td>d) Solids</td>
</tr>
<tr>
<td></td>
<td>Infant development</td>
</tr>
<tr>
<td>Family Health</td>
<td>Social supports</td>
</tr>
<tr>
<td></td>
<td>Relationship issues</td>
</tr>
<tr>
<td></td>
<td>Interaction with infant</td>
</tr>
<tr>
<td></td>
<td>Emotional changes</td>
</tr>
<tr>
<td></td>
<td>Changes in social status</td>
</tr>
<tr>
<td></td>
<td>Adequate housing</td>
</tr>
<tr>
<td></td>
<td>Rest and activity</td>
</tr>
<tr>
<td></td>
<td>Financial changes</td>
</tr>
<tr>
<td></td>
<td>Education/employment</td>
</tr>
<tr>
<td>Preventive Health Care</td>
<td>Breastfeeding</td>
</tr>
<tr>
<td></td>
<td>Car safety</td>
</tr>
<tr>
<td></td>
<td>Ambulance subscription</td>
</tr>
<tr>
<td></td>
<td>Regular health care</td>
</tr>
<tr>
<td></td>
<td>SIDS risk assessment</td>
</tr>
<tr>
<td></td>
<td>SIDS prevention</td>
</tr>
<tr>
<td></td>
<td>Home safety</td>
</tr>
<tr>
<td></td>
<td>Immunisation</td>
</tr>
<tr>
<td></td>
<td>Managing a sick child</td>
</tr>
</tbody>
</table>
Promoting social connectedness. Programme services were offered and implemented according to individual needs however one of the key aims of the programme was to improve utilisation of community and neighbourhood support systems. Both nurses and social workers were therefore engaged in promoting social support systems, informal resources, and enhancing skills and confidence to access these resources.

In summary, programme design attempted to translate the ecological model where an interdisciplinary approach aimed to meet the developmental needs of individual family members as well as the family as a unit. Nurses in particular were chosen as case managers for their experience in home visiting services to high-risk families, child health nurse qualifications, ability to work within an interdisciplinary framework and willingness to be part of a research programme. The nurses were part of a team structure within which weekly case conferencing, reflection, and supervision were valued. Within the ecological framework preventive strategies and early interventions used by the interdisciplinary team aimed to promote self-efficacy and attachment.

Schedule

The schedule for home visitation comprised weekly visits from the primary visiting nurse until the infant was six weeks old, fortnightly visits until the infant was three months old, then monthly visits until the age of twelve months. According to the schedule, the minimum number of nurse-visits expected per family was eighteen. Flexibility of the programme meant that the minimum number of visits could be exceeded where negotiated between families and nurses. On the other hand, missed visits were rescheduled where possible so that each family received at least the minimum standard number of home visits.

Comparison services

Families allocated to the comparison group were provided with information about community child health services as part of routine discharge planning at the recruiting hospital. Standard community child health care services involved the choice of one home visit by the local child health nurse with more extensive home
visiting provided to those with specific problems, predominantly child related, such as multiple birth, premature birth, and congenital disability. Further contact with the service relied upon parents attending their local community clinic using an appointment-based system.
CHAPTER 4

Results

Utility of the Screening Procedure

Six hundred and thirty six (63.09%) self-report questionnaires were completed and returned by women in the immediate postnatal period during recruitment. Sociodemographic information reported by the 636 respondents is presented in Table 6. Response numbers varied because respondents did not always complete each question. Response rate variations across items would seem to indicate inconsistent willingness to disclose certain personal, family, and environmental characteristics; however, the variation was small and ranged from 92.3% to 100%. Thus, response rate to the questionnaire was adequate and minimal internal questionnaire response bias precluded serious sample bias.

Sole Parent Status

Six hundred and fourteen (96.5%) respondents completed the question “Are you a sole parent?” Of these, 15.0% (n = 92) reported sole parent status.

Ambivalence to Pregnancy

An audit of hospital charts for consenting respondents was conducted for variables measuring compliance with antenatal care. Of the 458 consenting respondents who completed these questions, only 1.3% (n = 6) had not received appropriate antenatal care according to hospital records, compared with 12.6% (n = 20) non-consenting respondents who reported they had not received antenatal care. Thus, retrospective reports of antenatal care were deemed invalid in this study and only retrospective reports of seeking pregnancy termination were used to measure ambivalence to the pregnancy. Overall, 4.2% (n = 27) of respondents reported having sought termination of their pregnancy.
Table 6

**Sociodemographic Profile of Respondents to the Inclusion Questionnaire**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>%</th>
<th>Characteristic</th>
<th>%</th>
<th>Characteristic</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range (N = 617)</td>
<td>15-17 years</td>
<td>2.4</td>
<td>Single (N = 622)</td>
<td>12.9</td>
<td>&lt;$9000</td>
</tr>
<tr>
<td></td>
<td>18-24 years</td>
<td>30.2</td>
<td>Married (N = 622)</td>
<td>58.7</td>
<td>$9001-$16000</td>
</tr>
<tr>
<td></td>
<td>25-44 years</td>
<td>67.5</td>
<td>Defacto (N = 622)</td>
<td>24.9</td>
<td>$16001-$26000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Separated (N = 622)</td>
<td>2.4</td>
<td>$26001-$50000</td>
<td>38.2</td>
</tr>
<tr>
<td>Parity (N = 623)</td>
<td></td>
<td>Divorced (N = 623)</td>
<td>1.1</td>
<td>&gt;$50000</td>
<td>5.5</td>
</tr>
<tr>
<td>Primiparae</td>
<td>43.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiparae (N = 636)</td>
<td>56.7</td>
<td>Ethnicity (N = 636)</td>
<td>Australian born</td>
<td>75.9</td>
<td>12 years or more</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Born overseas</td>
<td>24.1</td>
<td>10 years or less</td>
</tr>
<tr>
<td>Sole parent (N = 614)</td>
<td></td>
<td>Aboriginal or TSI (N = 618)</td>
<td>15.0</td>
<td>2.9</td>
<td>7 years or less</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Special school</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Domestic Violence

Five hundred and ninety four (93.4%) respondents completed questions related to domestic violence. Of these, 7.2% (n = 43) reported being the victim of at least one form of domestic violence. Internal consistency for the scale composed to measure domestic violence was tested using Cronbach’s alpha producing a reliability coefficient of .78 and scores for this scale ranged from zero to six (M = 0.14, SD = 0.64). Thus, the scale was homogeneous.

Childhood Abuse of Parents

Of 636 respondents to the self-report questionnaire, 28 (4.4%) did not complete the question related to experiencing childhood abuse. Of 608 respondents who did complete this question, 12.2% (n = 74) reported that they had experienced abuse as a child. Of the 593 respondents who disclosed whether their partner was abused as a child, 6.4% (n = 38) reported some form of childhood abuse, 9.8% (n = 58) reported that they were not sure, and 83.8% (n = 497) said the partner had not experienced childhood abuse.

Social Validity of the Home Visiting Programme

Consent to Participate in the Immediate Postnatal Period

Of the 636 (63.09%) women approached in the immediate postnatal period who returned completed inclusion questionnaires, 463 (72.8%) gave written consent to participate in the longitudinal trial. Characteristics reported by women who gave consent to participate in the project longitudinally were compared with characteristics reported by women who wished only to complete the inclusion questionnaire. Data were analysed using SPSS for Windows Release 7.0 (Spss Inc., 1995) (SPSS) to test the significance of differences between means using analyses of variance (ANOVA). Categorical data were analysed using the chi-square statistic to test the significance of different proportions. Results at the .05 level of probability were accepted as statistically significant. No significant differences between the two groups were found for age range, $\chi^2(2, N = 636) = 3.43, p > 0.05$; parity, $\chi^2(1, N = 623) = 0.09, p > 0.05$; marital status, $\chi^2(1, N = 622) = 2.74, p > 0.05$; country of
birth, $\chi^2(1, N = 621) = 0.01, p > 0.05$; family income below $26,000 per annum, $\chi^2(1, N = 587) = 0.01, p > 0.05$; or educational level 10 years or less, $\chi^2(1, N = 618) = 0.08, p > 0.05$.

As is evident from Table 7 on the other hand, a higher proportion of women who reported other family characteristics indicating risk for poor adjustment to the parenting role showed willingness to participate by consent. Risk factor differences between those who did and did not give consent to participate reached statistical significance for (a) history of psychiatric illness $\chi^2(1, N = 617) = 6.92, p < 0.05$, and (b) financial stress variables $F(1, 616) = 3.89, p < 0.05$. Interestingly, although respondents reporting history of psychiatric illness were more likely to consent to participate, no significant difference was found for reporting history of postnatal depression, $\chi^2(1, N = 401) = 0.59, p > 0.05$. Similarly, respondents reporting that they had difficulty making ends meet, that is, had financial stress, were more likely to consent to participate, although no significant difference was found for level of family income as previously reported.

No statistically significant relationship was found between consent to participate in the project longitudinally and reported domestic violence $F(1, 593) = 3.09, p > 0.05$. Notably however, each respondent who reported the experience of threats of violence towards them in the home ($n = 8$), financial abuse ($n = 7$), or disclosed "other" forms of domestic violence ($n = 7$) gave consent to participate in the project. Thus, of the women who took time to read, complete, and return the inclusion questionnaire during the immediate postnatal period, those with personal, family, and environmental characteristics indicating risk for poor adjustment to the parenting role were more likely to consent to participate from the immediate postnatal period.

**Retention Rates**

Almost all women allocated to the intervention group accepted the home visiting programme ($n = 90$). Only one woman refused home visits from the child health nurse within the first six weeks. In her case, the criterion for inclusion had been intra-familial violence. Each of the other nine participants included for this criterion alone completed to infant age twelve months. Women allocated to the
Table 7
Parenting Risk Variable Data for Completed Inclusion Questionnaires

<table>
<thead>
<tr>
<th></th>
<th>Consent to participate (N = 463)</th>
<th>No consent to participate (N = 173)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Sole parent</td>
<td>15.8</td>
<td>12.7</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>% No social support</td>
<td>5.3</td>
<td>4.5</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>% Sought termination</td>
<td>4.8</td>
<td>2.5</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>% Mental illness self</td>
<td>15.2</td>
<td>7.0</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>% Mental illness partner</td>
<td>4.3</td>
<td>5.2</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>% History of postnatal depression</td>
<td>14.2</td>
<td>11.5</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>% Childhood abuse (self)</td>
<td>12.9</td>
<td>10.2</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>% Childhood abuse (partner)</td>
<td>6.1</td>
<td>7.3</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>¹Unstable housing</td>
<td>2.36 (1.31)</td>
<td>2.45 (1.39)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Range 1 to 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial stress</td>
<td>2.58 (1.08)</td>
<td>2.39 (1.06)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Range 1 to 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug use (marijuana)</td>
<td>1.17 (0.54)</td>
<td>1.24 (0.64)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Range 1 to 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>²Alcohol use</td>
<td>1.36 (0.67)</td>
<td>1.33 (0.57)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Range 1 to 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>³Domestic violence</td>
<td>0.17 (0.71)</td>
<td>0.06 (0.33)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Range 0 to 6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. ¹Number of address changes during previous two years. ²Alcohol use of more than 2 drinks/day: 1 = never; 2 = 1 day/week; 3 = 2 days/week; 4 = 3 days/week; 5 = 4 days/week.
³Domestic violence (DV) calculated by addition of DV variables; physical abuse, property abuse, verbal abuse, threats, financial abuse, social abuse, and other, 0 = no DV; 7 = all forms.
standard care comparison group universally accepted home visits to collect data (n = 91).

Differences between inclusion criteria and baseline observations of women retained to 12-months and those who withdrew were analysed using ANOVA (SPSS) to test the significance of differences between means and categorical data were analysed using the chi-square statistic (SPSS) to test the significance of different proportions. Results at the .05 level of probability were accepted as statistically significant. Between recruitment to the randomised-controlled trial in the immediate postnatal period and 12-months, over three-quarters of the original sample (76.24%) was retained. Of the home visiting programme group 68 (75.5%) completed, compared with 70 (76.9%) of the comparison group. Overall, no differences were found on demographic or other risk variables, parental adjustment, or child abuse potential for retention to the project.

Reasons for intervention participants leaving the project included moved away from the region (n = 18), and no reason stated (n = 4). Although four families gave no reason for dropping out of the programme, for two of these families the exposure of intrafamilial violence to home visitors may have influenced the decision to dropout. At the same time, comparison group families dropped out for similar reasons. These were moved away from the region (n = 14); unwilling to complete written questionnaire (n = 2); and withdrew without reason (n = 5).

Participants significantly more likely to have left the project before 12-months were less than 20 years of age, $F(1, 177) = 10.14, p < 0.05$, or had reported frequent address changes in the inclusion questionnaire, $F(1, 179) = 7.99, p < 0.05$. Table 8 shows that at the same time, variables found to be associated with retention to the project were poor parental attachment to the infant, $F(1, 175) = 4.16, p < 0.05$ and low maternal sense of competence, $F(1, 175) = 4.60, p < 0.05$, measured at baseline in the immediate postnatal period. Thus, whether allocated to the intervention or comparison group, mothers who experienced stress related to the parenting role during the first two weeks of the infant’s life were more likely to be retained in the trial even though younger and more mobile mothers were more likely to withdraw.
Table 8
Baseline Profile of Participants Retained to 12-Months

<table>
<thead>
<tr>
<th></th>
<th>Retained (N = 135)</th>
<th>Withdrawn (N = 46)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edinburgh Postnatal Depression Scale</td>
<td>9.00 (5.27)</td>
<td>7.55 (5.23)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Edinburgh Postnatal Depression Scale (^1) (% EPDS &gt;12)</td>
<td>23.9</td>
<td>18.4</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Child Abuse Potential Inventory</td>
<td>141.53 (92.83)</td>
<td>139.94 (95.43)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>Parenting Stress Index (PSI) Total</td>
<td>131.52 (24.61)</td>
<td>123.68 (26.83)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>PSI Attachment</td>
<td>13.70 (3.55)</td>
<td>12.39 (3.27)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>PSI Competence</td>
<td>30.64 (6.13)</td>
<td>28.13 (7.29)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>PSI Depression</td>
<td>21.00 (6.00)</td>
<td>19.15 (6.15)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>PSI Parental health</td>
<td>14.28 (3.37)</td>
<td>13.31 (3.55)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>PSI Social isolation</td>
<td>13.95 (4.43)</td>
<td>14.05 (4.20)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>PSI Relationship with spouse</td>
<td>17.93 (5.22)</td>
<td>17.21 (5.73)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>PSI Restriction of role</td>
<td>19.99 (5.52)</td>
<td>19.42 (6.07)</td>
<td>&gt; 0.05</td>
</tr>
</tbody>
</table>

Note. \(^1\)Percentage with EPDS above clinical threshold
Table 9
Satisfaction with Child Health Care Services¹

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N = 80)</th>
<th>Comparison (N = 63)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range 4 to 10</td>
<td>9.01 (1.07)</td>
<td>8.32 (1.36)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Convenience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range 3 to 10</td>
<td>8.30 (1.49)</td>
<td>7.25 (1.63)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Manner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range 3 to 10</td>
<td>9.17 (1.07)</td>
<td>8.20 (1.52)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range 3 to 10</td>
<td>9.09 (0.95)</td>
<td>7.95 (1.66)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Time spent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range 3 to 10</td>
<td>8.71 (1.46)</td>
<td>7.88 (1.70)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range 21 to 50</td>
<td>44.36 (4.39)</td>
<td>39.49 (6.14)</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

Note. ¹High score optimal
**Service Satisfaction**

At 6-weeks, 69.0% (n = 58) of women in the comparison group reported at least one occasion of attendance at the local community child health clinic, with 19.0% (n = 16) attending the clinic weekly. At 12-months, 21.1% (n = 19) of women remaining in the comparison group continued to attend the local community child health clinic.

ANOVA (SPSS) was used to test the significance of differences between means for total satisfaction and for each of the five subscales measuring service satisfaction at 6-weeks. Results at the .05 level of probability were accepted as statistically significant. Statistically significant group differences were found for each scale used to measure satisfaction with community child health services. Table 9 presents means (with standard deviations) showing higher satisfaction scores, that is, greater satisfaction for the home visiting programme group compared with comparison group participants accessing standard clinic-based services. ANOVA detected significant group differences for communication, F(1, 148) = 12.08, p < 0.05; convenience, F(1, 144) = 16.13, p < 0.05; interpersonal manner, F(1, 146) = 20.42, p < 0.05; general satisfaction, F(1, 147) = 27.56, p < 0.05; time spent, F(1, 148) = 10.22, p < 0.05; and overall satisfaction, F(1, 142) = 30.47, p < 0.05, with greater satisfaction reported for the home visiting programme. The Cronbach alpha coefficients for the subscales communication, convenience, manner, satisfaction, and time spent were .78, .85, .81, .77, and .79 respectively and for the overall service satisfaction scale the coefficient was .84.

**Effectiveness of the Home Visiting Programme**

It will be recalled that randomisation in the present study involved the assignment of participants on a random basis, with each participant having an equal chance of being assigned to either group. To determine whether the groups were, in fact, equal, intervention group mothers were compared with comparison group mothers on demographic, risk for child abuse and neglect, and baseline adjustment to parenting variables. ANOVA (SPSS) was used to compare means where appropriate and chi-square analysis (SPSS) was used to analyse categorical data. Sixteen
<table>
<thead>
<tr>
<th></th>
<th>Intervention (N = 90)</th>
<th>Comparison (N = 91)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean maternal age</td>
<td>25.72 (5.61)</td>
<td>26.67 (6.08)</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>% Primiparous mother</td>
<td>54.4</td>
<td>33.0</td>
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<tr>
<td>% Sole parent</td>
<td>42.5</td>
<td>37.8</td>
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<tr>
<td>% Australian born</td>
<td>80.0</td>
<td>74.7</td>
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<tr>
<td>% Identification as Indigenous Australian</td>
<td>9.0</td>
<td>2.2</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>% Family income below $26,000 p.a.</td>
<td>77.4</td>
<td>73.5</td>
<td>&gt; 0.05</td>
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<tr>
<td>% Educational level 10 years or less</td>
<td>16.7</td>
<td>26.4</td>
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<tr>
<td>% No social support</td>
<td>7.0</td>
<td>9.1</td>
<td>&gt; 0.05</td>
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<tr>
<td>% Sought termination</td>
<td>11.2</td>
<td>11.0</td>
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<td>% Mental illness self</td>
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<td>% Mental illness partner</td>
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<tr>
<td>% History of postnatal depression</td>
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<tr>
<td>% Physical domestic violence</td>
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<td>9.8</td>
<td>&lt; 0.05</td>
</tr>
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<td>Baseline EPDS mean score</td>
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<td>&gt; 0.05</td>
</tr>
<tr>
<td>Edinburgh Postnatal Depression Scale 1 (% EPDS &gt;12)</td>
<td>19.5</td>
<td>25.8</td>
<td>&gt; 0.05</td>
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<tr>
<td>Baseline CAPI abuse scale mean score</td>
<td>123.16 (77.05)</td>
<td>158.82 (103.97)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Baseline CAPI abuse scale score (% elevated CAPI)</td>
<td>11.5</td>
<td>30.3</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Baseline total PSI mean score</td>
<td>128.85 (24.71)</td>
<td>130.78 (25.83)</td>
<td>&gt; 0.05</td>
</tr>
</tbody>
</table>

Note. 1 Percentage with EPDS above clinical threshold
variables were tested and results at the .05 level of probability were accepted as statistically significant. Of these, only six statistically significant differences (presented in Table 10) were found between intervention group and comparison group characteristics. In the intervention group, there were more first time mothers, \( \chi^2(1, N = 181) = 8.48, p < 0.05 \); more Indigenous Australian mothers, \( \chi^2(1, N = 179) = 3.88, p < 0.05 \); and fewer women who reported past history of postnatal depression, \( \chi^2(1, N = 181) = 7.76, p < 0.05 \). Fewer intervention group mothers reported that their partner had a history of psychiatric illness, \( \chi^2(1, N = 165) = 7.16, p < 0.05 \), and fewer reported physical domestic violence, \( \chi^2(1, N = 166) = 3.98, p < 0.05 \). Physical child abuse potential measured by the CAPI abuse scale score also differentiated the two groups, with significantly fewer intervention group participants gaining an elevated CAPI abuse scale score at baseline, \( \chi^2(1, N = 176) = 9.40, p < 0.05 \). Thus, parity, baseline CAPI abuse scale score, history of postnatal depression, history of psychiatric illness of partner, identification as Aborigine or Torres Strait Islander, and physical forms of domestic violence were planned to be used as independent variables when testing for differences between the two groups.

Notably however, very small effect sizes were found for history of postnatal depression, history of psychiatric illness of partner, identification as Aborigine or Torres Strait Islander, and physical forms of domestic violence variables, and their inclusion did not alter any subsequent analyses. It was therefore decided not to use covariance if resulting cells contained fewer than ten subjects for analysis. Thus, both parity and baseline CAPI abuse scale score were used as categorical variables as follows: parity (Primiparas versus Multiparae) and CAPI abuse scale score (high versus low abuse risk).

Considering that domains of adjustment to the parenting role were obtained from the same participants over time and were thus correlated, repeated measures multivariate analyses of variance (MANOVA) were used to test for between groups differences from baseline to 12-months. Where interaction effects were found for group, parity, and time, groups were analysed separately according to parity. Likewise, where interaction effects were found for group, baseline CAPI abuse scale score and time, groups were analysed separately according to baseline CAPI abuse
scale score. Where significant time differences were found, follow-up t-tests were conducted. Two-tailed tests were used for both time and group hypotheses. Where significant group effects were found, mean scores at each time interval were averaged and follow-up t-tests conducted. Where interaction effects were found for group and time, groups were analysed separately and follow-up t-tests conducted where significant differences were detected. The Modified Bonferroni Test from Keppel was used to adjust the accepted alpha level from .05 to .03 for these analyses. Post-hoc tests were not conducted on interactions found between group, baseline CAPI abuse scale score and time for the parent depression nor the relationship with spouse scale of the PSI because cell sizes were less than ten.

**Parent/Family Function**

**Edinburgh Postnatal Depression Scale.** Postnatal depressive episodes and low mood from the immediate postnatal period appear to be directly related to a complex interaction of biological, interpersonal, and socioenvironmental factors as previously discussed. The effect of these interactions on the development and maintenance of symptoms of postnatal depression is mediated by a range of factors so that the relative risk for symptoms of depression reduces over time. Thus, for the present study EPDS scores were analysed in two stages. Firstly, MANOVA (SPSS) was used to test for differences between groups in mean EPDS score from baseline to 6-weeks. Parity and baseline CAPI abuse scale score were used as independent variables. Secondly, ANOVA (SPSS) was used to test differences in mean EPDS scores at 12-months and interactions with parity and baseline CAPI abuse scale score were tested. In addition, EPDS scores were dichotomised into those greater than 12 (above clinical threshold) and those 12 and under (below clinical threshold). Results are presented in Table 11.

On the EPDS, a significant three-way interaction was found between group, parity, and time, $F(1, 169) = 4.23, p < 0.05$. Simple main effect analyses were conducted, and a significant effect for time was found for EPDS score for both intervention, $F(1, 84) = 28.46, p < 0.05$, and comparison groups, $F(1, 85) = 4.50, p < 0.05$, with mothers overall scoring higher EPDS scores at baseline than at 6-weeks. A
repeated measures ANOVA (SPSS) was then conducted to investigate reduction of EPDS scores for Primiparas and Multiparae separately. A significant interaction was found between intervention group and time for Primiparas, $F(1, 75) = 8.68$, $p < 0.05$.

Simple main effect analysis showed a significant effect for time for Primiparas in the intervention group, $F(1, 47) = 41.88$, $p < 0.05$. Post-hoc t-tests showed a significant reduction for Primiparas in the intervention group between EPDS scores at baseline, ($M = 8.54$, $SD = 4.43$) and 6-weeks ($M = 5.35$, $SD = 4.01$), ($t(47) = 6.47$, $p < 0.03$). On the other hand, no statistically significant reduction was found for Primiparas in the comparison group between EPDS scores at baseline ($M = 8.28$, $SD = 5.12$) and 6-weeks ($M = 7.93$, $SD = 5.12$), ($t(28) = 0.37$, $p > 0.03$). Thus, there was a relationship between intervention and reduction of EPDS scores over time for Primiparas, with first time mothers in the intervention group reporting significantly fewer symptoms of postnatal depression at 6-weeks than at baseline. This difference was not found for first time mothers in the comparison group, whose symptoms of postnatal depression did not reduce significantly at 6-weeks.

For Multiparae, only a significant main effect for time was found, $F(1, 94) = 14.13$, $p < 0.05$. Post-hoc t-tests showed a significant reduction in EPDS score from baseline ($M = 9.01$, $SD = 5.73$) to 6-weeks ($M = 7.19$, $SD = 5.17$), ($t(95) = 3.86$, $p < 0.03$), with experienced mothers generally reporting fewer symptoms of postnatal depression at 6-weeks than at baseline. Notably, no interaction effects for group, baseline CAPI abuse scale score and time were found. Thus, inclusion of baseline CAPI abuse scale score as an independent variable did not alter these analyses of EPDS score.

The ANOVA (SPSS) procedure was used to test differences between intervention and comparison groups on 12-month EPDS scores and results at the .05 level of probability were accepted as statistically significant. No significant difference was found between intervention and comparison group EPDS scores, $F(1, 130) = 0.91$, $p > 0.05$. No significant interaction effects between group and parity, or group and baseline CAPI abuse scale score were found. Thus, at 12-months no relationship between intervention, parity, or baseline child abuse potential on EPDS score was found. Means and standard deviations are presented in Table 11.
Table 11  
Parent/Family Function Data

<table>
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<th>Intervention</th>
<th>Comparison</th>
<th>p value</th>
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<td>Primiparas</td>
<td>Multiparae</td>
<td>Primiparas</td>
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<td>(N = 38)</td>
<td>(N = 29)</td>
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<td>(N = 38)</td>
<td>(N = 27)</td>
<td>(N = 20)</td>
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<td>(N = 28)</td>
<td>(N = 18)</td>
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<tr>
<td>Depression</td>
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(table continues)
### Parent/Family Function Data

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<td>Multiparae (N = 28)</td>
<td>Primiparas (N = 18)</td>
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<td>97.09 (18.35)</td>
<td>99.21 (19.51)</td>
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</table>

**Note.** * p value, interaction between parity, group, and time. Primiparas and Multiparae were analysed separately and numbers varied by 1-3 participants. N = maximum number.
Additionally, at baseline, 22.7% (n = 40) of participating mothers scored higher than the clinical threshold of 12 on the EPDS, with non-significant differences between the two groups, $\chi^2(1, N = 176) = 0.99, p > 0.05$. The overall percentage of mothers with EPDS scores >12 decreased at 6-weeks (13.3%), and the proportion of mothers with high scores was statistically different between groups. Specifically, only 5.8% (n = 5) of mothers in the intervention group had an EPDS score >12 at 6-weeks compared with 20.7% (n = 18) in the comparison group, $\chi^2(1, N = 173) = 8.30, p < 0.05$. This indicates that significantly fewer mothers in the intervention group gained EPDS scores above the clinical threshold at 6-weeks postpartum. Similarly at 12-months, fewer mothers in the intervention group gained EPDS scores above the clinical threshold than in the comparison group (6.2% versus 13.6%), though numbers in these groups (4 versus 9) were too small to be tested for statistical significance.

**Parenting Stress Index.** For PSI data, a repeated measures MANOVA (SPSS) design was used to test for differences over time between groups. Parent domain scores indicated improvement over time for parenting stress associated with symptoms of postnatal depression, parent-infant attachment, parent’s sense of competence, and parent health. Specifically, results of the repeated measures MANOVA showed a significant overall main effect for time for: (a) symptoms of postnatal depression, $F(2, 260) = 3.09, p < 0.05$; (b) parent-infant attachment, $F(2, 258) = 10.22, p < 0.05$; (c) parent’s sense of competence, $F(2, 220) = 7.88, p < 0.05$; and (d) parent health, $F(2, 264) = 11.17, p < 0.05$. No statistically significant group effects were found for these or any other subscales of the parent domain.

However, significant effects were shown when parity was used as an independent variable. A significant interaction between parity, group and time was found for the parents’ sense of competence scale, $F(2, 216) = 6.01, p < 0.05$. Follow-up repeated measures ANOVA detected a significant main effect for time for both intervention, $F(2, 108) = 3.66, p < 0.05$, and comparison, $F(2, 112) = 4.63, p < 0.05$, groups. For the intervention group, follow-up post-hoc t-tests indicated that there was a significant improvement in competence between baseline ($M = 30.74, SD = 6.78$) and 6-weeks ($M = 28.06, SD = 6.62$), ($t(46) = 3.37, p < 0.03$) for Primiparas
only. No significant differences in parents’ sense of competence were found for Multiparae in this group. Improvement in competence found for Primiparas in the intervention group between baseline and 6-weeks was not maintained over time, with the mean competence score increasing to 29.93 (SD = 5.58) at 12-months.

Conversely, follow-up post-hoc t-tests for the comparison group showed significant improvement from baseline (M = 31.41, SD = 7.69) to 12-months (M = 25.00, SD = 7.15), (t(11) = 2.83, p < 0.03) for Primiparas. Also, for Multiparae in the comparison group, a significant improvement from baseline (M = 29.41, SD = 5.64) to 6-weeks (M = 27.69, SD = 6.57), (t(57) = 2.33, p < 0.03) was found. Thus, there was a significant relationship between intervention and reduction of parents’ sense of competence scores over time for Primiparas, with first time mothers in the intervention group reporting improved sense of competence between baseline and 6-weeks. This relationship was no longer demonstrated at 12-months. At the same time, scores for Primiparas in the comparison group improved significantly over time.

A significant interaction between parity, intervention and time was also found for the overall parent domain score of the PSI, F(2, 182) = 7.50, p < 0.05. For Primiparas in the intervention group, there was a significant improvement in mean total PSI scores between baseline (M = 129.49, SD = 21.41) and 6-weeks (M = 121.74, SD = 23.14), (t(46) = 2.41, p < 0.03), but improvement was not maintained over time to 12-months. Contemporaneously, mean total scores for Primiparas in the comparison group improved significantly over time from baseline (M = 129.90, SD = 27.47) to 12-months (M = 111.20, SD = 20.42), (t(9) = 3.42, p < 0.03). Conversely, mean total scores for Multiparae in the comparison group deteriorated between 6-weeks (M = 123.28, SD = 28.78) and 12-months (M = 130.79, SD = 26.16), (t(38) = 2.38, p < 0.03). These results parallel data from the competence subscale of the PSI, where the relationship between intervention and reduction of parenting stress for first time mothers between baseline and 6-weeks was no longer demonstrated at 12-months.

As Table 11 (in which the means and SDs for PSI scores are presented) indicates, improvement over time for parenting stress associated with child domain
scores for acceptability of child to parent, perception of child mood, and child reinforcement of parental self-esteem, was found. Results of the MANOVA showed a significant effect for time for: (a) acceptability of child to parent, $F(1, 130) = 6.83$, $p < 0.05$; (b) perception of child mood, $F(1, 130) = 9.60$, $p < 0.05$; and (c) child reinforcement of parental self-esteem, $F(1, 131) = 9.73$, $p < 0.05$. No other significant effects were found. There were no significant differences between groups, or significant interactions between group, parity and time, or group, baseline CAPI abuse scale score and time. The ANOVA (SPSS) procedure was used to test differences between intervention and comparison groups for parental perception of child adaptability, and child distractability variables measured only at 12-months. Results were not statistically significant at the .05 level of probability and again there were no significant interactions between group, parity and time, or group, baseline CAPI abuse scale score and time. Thus, for the child domain subscales of the PSI, there was no relationship between intervention and reduction of parenting stress over time, with overall improvement shown for three of the four subscales tested.

**Child Abuse Risk**

As will be recalled, a statistically significant difference in CAPI abuse scale score was found when looking for group differentiation at randomisation, $\chi^2(1, N = 176) = 9.40$, $p < 0.05$, with 11.5% ($n = 10$) of intervention and 30.3% ($n = 27$) of comparison group participants scoring an elevated CAPI abuse scale score according to Milner’s (1986) classification system. A repeated measures MANOVA (SPSS) design was used to test for differences over time between groups for the CAPI abuse scale score measured at baseline, 7-months, and 18-months. As Table 12 shows, means and standard deviations for the abuse scale score were correlated at each occasion of measurement. Therefore, the raw data were transformed by using the square root of $x + 1$ prior to statistical analysis (Winer, 1971).

A significant three-way interaction between parity, group, and time was found for CAPI abuse scale score, $F(2, 240) = 5.52$, $p < 0.05$. For the intervention group, follow-up univariate ANOVAs indicated that there was a main effect for time only, $F(2, 118) = 3.53$, $p < 0.05$. 
<table>
<thead>
<tr>
<th></th>
<th>Intervention (N = 61)</th>
<th>Comparison (N = 63)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>122.96 (75.46)</td>
<td>157.20 (105.02)</td>
</tr>
<tr>
<td>7-months</td>
<td>102.83 (69.83)</td>
<td>126.03 (99.27)</td>
</tr>
<tr>
<td>18-months</td>
<td>106.41 (73.67)</td>
<td>140.89 (113.40)</td>
</tr>
</tbody>
</table>
Post-hoc paired t-tests indicated a significant reduction between baseline \((M = 11.40, SD = 3.13)\) and 7-months \((M = 10.46, SD = 3.34)\), \((t(77) = 3.16, p < 0.03)\), for this group. Thus, a significant reduction in CAPI abuse scale score was found for the intervention group between baseline and 7-month assessments. There were no further significant changes over time for this group. Thus, the reduction in CAPI abuse scale score found from baseline to 7-months was maintained to 18-month follow up.

At the same time, an interaction between parity and time was found for the comparison group, \(F(2, 122) = 5.64, p < 0.05\). This interaction was further analysed using simple main effect analyses. There was a significant decrease in mean CAPI abuse scores between baseline \((M = 13.36, SD = 3.97)\) and 7-months \((M = 11.63, SD = 4.45)\), \((t(52) = 4.81, p < 0.03)\), for Multiparae in the comparison group followed by a significant rise in mean CAPI abuse scores between 7-months \((M = 11.35, SD = 4.33)\) and 18-months \((M = 12.52, SD = 5.02)\), \((t(45) = -2.30, p < 0.03)\). There were no significant effects found for Primiparas in the comparison group, whose CAPI abuse scale score remained stable between baseline \((M = 11.02, SD = 5.18)\), 7-months \((M = 11.39, SD = 4.55)\), and 18-months \((M = 9.72, SD = 4.63)\). In summary, a significant decrease in CAPI abuse scale score was found for Multiparae in the comparison group between baseline and 7-months, followed by a significant increase at follow up, as distinct from stability of scores for the Primiparas. Most notably, reduction in abuse scale scores between baseline and 7-months for the intervention group overall was maintained to 18-months follow-up. No other effects were found. There was no significant interaction between baseline CAPI abuse scale score, groups, and time.

**Home Environment**

The ANOVA (SPSS) procedure was used to test differences between intervention and comparison groups on HOME Inventory scores and results at the .05 level of probability were accepted as statistically significant. At 6-weeks, the HOME Inventory subscale that measured provision of appropriate play materials became a dichotomous variable when redundant items were removed (to make it age appropriate) and was thus tested using the chi-square statistic (SPSS). Each subscale of the HOME Inventory and the total HOME scale was tested for interaction with
<table>
<thead>
<tr>
<th>HOME Inventory Scale</th>
<th>Intervention</th>
<th>Comparison</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional/verbal responsivity of parent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six week measure</td>
<td>9.54 (1.16)</td>
<td>8.80 (1.61)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>12-month measure</td>
<td>9.31 (1.85)</td>
<td>9.35 (1.59)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Acceptance of child's behaviour</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six week measure</td>
<td>7.19 (0.81)</td>
<td>6.71 (1.16)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>12-month measure</td>
<td>6.71 (1.01)</td>
<td>6.57 (1.25)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Organisation of environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six week measure</td>
<td>5.50 (0.95)</td>
<td>5.01 (1.16)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>12-month measure</td>
<td>5.29 (0.96)</td>
<td>5.16 (1.04)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Provision of appropriate play materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six week measure</td>
<td>7.91 (1.70)</td>
<td>7.68 (1.55)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>12-month measure</td>
<td>7.91 (1.70)</td>
<td>7.68 (1.55)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Maternal involvement with child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six week measure</td>
<td>3.62 (0.78)</td>
<td>2.77 (1.24)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>12-month measure</td>
<td>4.12 (1.77)</td>
<td>4.12 (1.74)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Opportunities for variety in daily stimulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six week measure</td>
<td>1.62 (0.51)</td>
<td>1.53 (0.59)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>12-month measure</td>
<td>3.31 (1.07)</td>
<td>3.35 (1.42)</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Total HOME score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six week measure</td>
<td>28.34 (2.90)</td>
<td>25.51 (4.34)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>12-month measure</td>
<td>36.57 (5.88)</td>
<td>35.78 (5.32)</td>
<td>&gt;.05</td>
</tr>
</tbody>
</table>

Note. ¹ Chi-square test
parity and tested separately for interaction with baseline CAPI abuse scale score. No significant interaction effects between group and parity, or group and baseline CAPI abuse scale score were found.

At 6-weeks, the intervention group scored significantly higher than the comparison group for six of the seven scales of the HOME Inventory. As Table 13 shows, statistically significant group differences were found on subscales: (a) responsivity, $F(1, 171) = 11.43, p < 0.05$; (b) acceptance, $F(1, 171) = 10.13, p < 0.05$; (c) organisation, $F(1, 171) = 8.82, p < 0.05$; (d) play materials, $\chi^2(1, N = 172) = 10.61, p > 0.05$; (e) involvement, $F(1, 171) = 29.03, p < 0.05$; and (f) total HOME Inventory score, $F(1, 171) = 25.16, p < 0.05$, providing evidence for the positive effect the intervention had on influencing both the parent-infant interaction and quality of the home environment from a child-developmental perspective. Conversely, between group comparison of HOME Inventory subscales and for the total HOME Inventory score at 12-months showed non-significant differences between the groups on each of these variables, indicating that the programme effect previously found on influencing quality of the home environment for the child was not maintained.

**Child Health**

Chi-square analysis (SPSS) was used to compare mothers in the intervention group with mothers in the comparison group on preventive child health behaviour variables and an ANOVA was used (SPSS) to compare means where appropriate. Each variable was tested for interaction with parity and tested separately for interaction with baseline CAPI abuse scale score. Results at the .05 level of probability were accepted as statistically significant.

At 6-weeks, no statistically significant differences were found between the groups for: (a) breast-feeding rates (64% and 67%, respectively); (b) breast-feeding rates amongst women who had planned to breast-feed (73% and 76%, respectively); (c) knowledge or practice of SIDS preventive behaviour, specifically maternal smoking (37% and 43%, respectively), prone sleeping (15% and 21% respectively) and means for knowledge of SIDS risk minimising factors were 2.0 and 1.65 (SDs 1.21 and 1.35 respectively). Means (with standard deviations in parentheses) for
healthcare attendance for: (a) mother were 1.19 (1.78) and 1.5 (2.96) respectively; (b) infant for routine care were 1.03 (2.10) and 0.97 (1.20) respectively; and (c) sick infant were 0.68 (1.33) and 0.46 (0.76) respectively.

A mass media campaign was commenced by the Queensland Sudden Infant Death Syndrome Foundation to improve community knowledge of preventive behaviours half way through the study. Before the campaign was initiated, knowledge level across the study groups was limited but there was a strong trend for those in the intervention group to have higher knowledge scores ($M = 1.81$, $SD = 1.26$) than those in the comparison group ($M = 1.30$, $SD = 1.44$), ($F(1, 94) = 1.86$, $p = .056$). The mass media campaign increased both knowledge and practice across the groups. Means (with standard deviations in parentheses) for SIDS prevention knowledge rose to 2.0 (1.21) and 1.65 (1.35) respectively. At the same time, the proportion of parents complying with recommendations for infant sleep position to prevent SIDS rose in both intervention and comparison group, with 69.6% compliance rising to 79.1% compliance in the comparison group and 82.7% compliance rising to 84.9% for intervention group.

At 6-weeks, no statistically significant differences were found between the groups for utilisation of other community services. Notably, no significant interaction effects between group and parity, or group and baseline CAPI abuse scale score were found on preventive child health variables at 6-weeks.

At 12-months, means for perception of child’s feeding behaviours for intervention group and comparison group were 2.28 and 1.78 ($SDs = 2.76$ and 2.29, respectively). Means for perception of child’s sleeping patterns for intervention group and comparison group were 2.61 and 2.10 ($SDs = 3.03$ and 2.51, respectively). The higher ratings found for the intervention group were not significantly different at the .05 level of statistical significance, thus differences in parental distress related to childhood feeding and sleeping variants were not statistically significant.

Similarly, there was no statistically significant group difference in age appropriate, completed immunisation for preventable diseases. Cronbach’s index of internal consistency for the scale measuring completed immunisation for preventable diseases was .95. Intervention group means for immunisation compliance were
higher (M = 5.51, SD = 1.50) than for comparison group (M = 5.26, SD = 1.73) although the difference was not significant, F(1, 120) = 0.74, p > 0.05. Of the 29% (n = 35) of parents who had not fully immunised their child to 12-months overall, 20% nominated that it was a personal choice or that a relative had influenced the decision, while the remaining 80% gave the reasons that a health care professional had advised against it or that the child had an illness precluding immunisation. There was no relationship between intervention status and reason given for incomplete immunisation, χ²(1, N = 35) = 1.07, p > 0.05, with similar reasons given for both intervention and comparison groups. At 12-months, no statistically significant differences were found between the groups for utilisation of other community services.

Items that measured child safety and knowledge of injury prevention were tested for between group differences using the chi-square statistic. Fewer intervention group infants had ingested poison, however the numbers in these groups (0 versus 4) were too small to be tested for statistical significance. There was no relationship between intervention status and administration of medication to children in the first year of life, χ²(3, N = 101) = 2.50, p > 0.05, with both intervention and comparison group parents most commonly reporting the use of paracetamol for relief of pain associated with teething, followed by the use of antibiotics for a range of infectious conditions and bronchodilators for the treatment of asthma. A statistically significant relationship between intervention status and whether parents were advised to administer the medication by a medical practitioner was found. Comparison group parents were significantly more likely to report administration of medication to their child without the advise of a medical practitioner, χ²(1, N = 128) = 4.56, p < 0.05, than were intervention group parents (21.1% compared with 11.7%, respectively). Further analysis using baseline CAPI abuse scale score as an independent variable indicated that parents in the comparison group were significantly more likely to administer medication without the advise of a medical practitioner if the baseline CAPI abuse scale score was elevated, whereas no relationship was found for those whose score was not elevated. However, numbers in these groups (1 versus 12) were too small to be tested for statistical significance. Thus, comparison group parents
with high baseline CAPI abuse scale score were significantly more likely to administer medication to their children without medical advice than were other parents.

In summary, no significant group differences were found at 6-weeks for preventive health behaviours of parents for their infants, or utilisation of other community services. At 12-months, no statistically significant differences were found for perceptions of infant feeding and sleeping patterns, knowledge of child safety, or utilisation of other community services. Four comparison group children experienced poison ingestion in their first year while no poisonings were reported in the intervention group. Regarding administration of medication to children in the first year of life, there was a significant relationship between intervention status and whether parents were advised to administer the medication by a medical practitioner, with intervention parents more likely to report that a medical practitioner advised its administration.

**Child Development**

Age adjusted scores for mental development index, motor index, orientation/engagement percentile and total behaviour percentiles were tested for statistically significant group differences using the ANOVA (SPSS) procedure. Results at the .05 level of probability were accepted as statistically significant. No statistically significant differences were found for any of the Bayley Scales of Infant Development. Each of the Bayley Scales of Infant Development was tested for interaction with parity and tested separately for interaction with baseline CAPI score. No significant interaction effects between group and parity, or group and baseline CAPI abuse scale score were found. Means and standard deviations are presented in Table 14.
Table 14
Between Groups Comparison of Bayley Scales of Infant Development at 12-months

<table>
<thead>
<tr>
<th>Development Scale</th>
<th>Intervention (N = 68)</th>
<th>Comparison (N = 69)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Development Index</td>
<td>101.59 (15.66)</td>
<td>102.87 (11.85)</td>
</tr>
<tr>
<td>Range 10 to 128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Index</td>
<td>105.54 (13.28)</td>
<td>105.30 (14.19)</td>
</tr>
<tr>
<td>Range 56 to 134</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation/Engagement Percentile</td>
<td>56.86 (28.04)</td>
<td>55.00 (29.03)</td>
</tr>
<tr>
<td>Range 1 to 99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Percentile</td>
<td>64.59 (27.70)</td>
<td>61.88 (27.91)</td>
</tr>
<tr>
<td>Range 3 to 99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Predicting Adjustment to the Parenting Role

Prediction of High Parenting Stress

To examine whether measures taken in the immediate postnatal period were predictive of parenting adjustment, linear regression using SPSS was used with total PSI and EPDS score at 12-months and CAPI abuse scale score at 18-months follow-up as dependent variables. In all regressions, predictors were added in three blocks. These were:

1. Sociodemographic variables; maternal age at time of child’s birth, maternal education level, family income level, and frequency of physical domestic violence.

2. Maternal adjustment variables; baseline PSI, EPDS, and physical child abuse potential scores.

3. Parent-child interaction variables; 6-week HOME Inventory scores.

Table 15 presents detailed calculations for the linear regression using scores for total PSI and EPDS at 12-months and CAPI abuse scale score at 18-months follow-up as dependent variables. Firstly, for total PSI at 12-months, block 1 resulted in no significant prediction. However, the addition of block 2 variables resulted in a significant equation, F(4, 64) = 22.62, p < 0.05 and accounted for 61% of the variance. Addition of the block 3 variables improved prediction to 63% of the variance, F(1, 63) = 3.30, p > 0.05. HOME Inventory scores at six weeks were marginally significant individual predictors (p = .07). This variable joined education level (p < .05), domestic violence (p < .05) and high baseline stress scores (p < .05) as significant predictors of poor adjustment to the parenting role. Thus, low education, the presence of domestic violence in the household and parenting stress all predicted poor adjustment to the parenting role at 12-months as measured by PSI scores.

Strength of the Baseline Parenting Stress Index Measure

The baseline scores of parenting stress were strong predictors for 12-months scores, therefore the regression model was repeated, excluding it as an independent variable to test the prediction afforded by the other variables. As Table 15 shows, the
addition of block 2 without baseline parenting stress as an independent variable resulted in a significant equation, $F(3, 65) = 11.58, p < 0.05$ and accounted for 39% of variance. Addition of block 3 variables resulted in a significant equation, $F(1, 64) = 6.32, p < 0.05$ and improved prediction to 44% of variance. Removing the baseline measure of parenting stress as a predictive variable from the equation strengthened the predictive value of 6-week HOME scores ($p < .05$). Other significant univariate predictors were education level ($p < .05$), baseline EPDS score ($p < .05$), and baseline CAPI abuse scale score ($p < .05$). Thus, mothers with limited education, higher baseline abuse potential and depression scores, and poor 6-week HOME Inventory scores were more likely to be at risk for poor adjustment to the parenting role. Notwithstanding these results, prediction afforded by the baseline PSI scores subjugated prediction from the other variables revealing its strength to predict for parenting stress at 12-months.

**Prediction of Postnatal Depression**

Next, for 12-months EPDS scores, the first block resulted in no significant prediction, whereas addition of block 2 variables accounted for 43% of variance, $F(4, 99) = 17.98, p < 0.05$. Significant predictors were baseline EPDS score ($p < .05$), baseline CAPI abuse scale score ($p < .05$), and baseline PSI score ($p < .05$). Addition of the block 3 variable led to no improvement in prediction, $F(1, 98) = 0.69, p < 0.05$. These results indicate that measures for postnatal depression, physical child abuse potential and parenting stress in the immediate postnatal period all predicted level of postnatal depression at 12-months.

**Prediction of Physical Child Abuse Potential**

Finally, for 18-months CAPI scores, block 1 resulted in no significant prediction. Addition of the second block improved prediction to 51% of the variance, $F(4, 48) = 10.48, p < 0.05$ and baseline CAPI abuse scale score were the only statistically significant univariate predictors. Addition of the third block improved prediction to 55% of the variance and significance of the baseline CAPI abuse scale score increased from .01 to .008, $F(1, 47) = 3.64, p > 0.05$. The baseline scores of abuse potential were strong predictors for the 18-months follow-up scores. Therefore
Table 15
Summary of Regressions Predicting Total PSI, EPDS (at 12-Months), and CAPI Scores (at 18-Months Follow-Up) from Sociodemographic, Maternal Adjustment, and Parent-Child Interaction Variables

<table>
<thead>
<tr>
<th></th>
<th>Total PSI (12 months)</th>
<th>Total PSI (12 months) Excludes PSI as IV</th>
<th>EPDS (12 months)</th>
<th>CAPI (18 months)</th>
<th>CAPI (18 months) Excludes CAPI as IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>$\beta^r$</td>
<td>$r^2$</td>
<td>r</td>
<td>$\beta^r$</td>
</tr>
<tr>
<td>Block 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Age</td>
<td>-.06</td>
<td>-.02</td>
<td>-.06</td>
<td>-.06</td>
<td>.03</td>
</tr>
<tr>
<td>Maternal Education</td>
<td>.21</td>
<td>.156</td>
<td>.21</td>
<td>.12</td>
<td>.16</td>
</tr>
<tr>
<td>Family Income</td>
<td>.13</td>
<td>.09</td>
<td>.13</td>
<td>.22</td>
<td>-.01</td>
</tr>
<tr>
<td>Domestic Violence</td>
<td>.09</td>
<td>.17</td>
<td>.09</td>
<td>.14</td>
<td>.06</td>
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<tr>
<td>Block 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSI</td>
<td>.73</td>
<td>.62</td>
<td>.39</td>
<td>.55</td>
<td>.56</td>
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<tr>
<td>EPDS</td>
<td>.51</td>
<td>.08</td>
<td>.51</td>
<td>.25</td>
<td>.54</td>
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<tr>
<td>Abuse Potential</td>
<td>.47</td>
<td>.01</td>
<td>.61**</td>
<td>.47</td>
<td>.30</td>
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<tr>
<td>Block 3:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>6/52 HOME scores</td>
<td>-.44</td>
<td>-.15</td>
<td>.63</td>
<td>-.44</td>
<td>-.25</td>
</tr>
</tbody>
</table>

Note. ¹Beta weights presented are those calculated for when all predictor variables have been entered.
²Domestic Violence rated for frequency of physical abuse where 1 = often, 2 = sometimes, 3 = rarely, 4 = never.
* p < 0.05.    ** p < 0.01
the regression model was repeated, excluding it as an independent variable. The addition of block 2 without baseline abuse potential as an independent variable resulted in a significant equation, $F(3, 49) = 10.33$, $p < 0.05$ and accounted for 45% of the variance. Addition of the third block improved prediction to 48% of the variance, $F(1, 48) = 3.16$, $p > 0.05$. Initial parenting stress scores ($p < .01$) were the only statistically significant univariate predictors and 6-week HOME Inventory scores a marginally predictive measure ($p = .08$). Thus, mothers with high parenting stress scores in the immediate postnatal period and those with poor HOME Inventory scores were more likely to be those with elevated Child Abuse Potential Inventory scores at 18-months follow-up.

**Predicting Children's Cognitive, Motor, and Behavioural Development**

To examine whether measures taken in the immediate postnatal period were predictive for child development, linear regression was used with mental development index, motor development index, and total behaviour rating scale percentile as dependent variables. Predictors were added in three blocks. These were:

1. Sociodemographic variables: maternal age at time of child's birth, maternal education level, family income level, and frequency of physical domestic violence.

2. Maternal adjustment variables: baseline PSI, EPDS, and physical child abuse potential scores.

3. Parent-child interaction variables: 6-week HOME Inventory scores.

For mental development index, block 1 resulted in no significant prediction. Likewise, addition of the block 2 variables resulted in no significant prediction, $F(4, 104) = 0.36$, $p > 0.05$. With the addition of block 3, total HOME Inventory scores accounted for only 2% of the variance and were not significant univariate predictors, $F(1, 103) = 2.77$, $p > 0.05$.

For motor index score, the first block resulted in no significant prediction. Addition of variables in the second block improved prediction to 10% of the variance but were not predictive, $F(4, 104) = 2.01$, $p > 0.05$, although significant individual predictors of family income level ($p < .05$) and abuse potential score ($p < .05$). Thus, children from low-income families and whose mothers had lower abuse potential at
Table 16
Summary of Regressions Predicting Infant Cognitive, Motor, and Behavioural Development From Sociodemographic, Maternal Adjustment, and Parent-Child Interaction Variables

<table>
<thead>
<tr>
<th></th>
<th>Mental Development Index</th>
<th>Motor Development Index</th>
<th>Total Behaviour Percentile</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>Block 1:</td>
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</tr>
<tr>
<td>Maternal Age</td>
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<td>-.01</td>
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<tr>
<td>Maternal Education</td>
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<td>-.03</td>
<td>-.13</td>
</tr>
<tr>
<td>Family Income</td>
<td>.14</td>
<td>.10</td>
<td>-.12</td>
</tr>
<tr>
<td>Domestic Violence</td>
<td>.05</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td>Block 2:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PSI</td>
<td>-.06</td>
<td>.02</td>
<td>-.07</td>
</tr>
<tr>
<td>EPDS</td>
<td>-.14</td>
<td>-.12</td>
<td>-.07</td>
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<tr>
<td>Abuse Potential</td>
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<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>Block 3:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6/52 HOME scores</td>
<td>.19</td>
<td>.17</td>
<td>.06</td>
</tr>
</tbody>
</table>

Note. $^*$Beta weights presented are those calculated for when all predictor variables have been entered.
$^1$Domestic Violence rated for frequency of physical abuse where 1 = often, 2 = sometimes, 3 = rarely, 4 = never.

* p < 0.05.  ** p < 0.01
baseline were more likely to demonstrate superior motor skills. Addition of the 6-week HOME Inventory scores in the third block resulted in no improvement of prediction, $F(1, 103) = 2.31, p > 0.05$.

For behaviour rating scale percentile, block 1 afforded no significant prediction. Addition of the block 2 variables resulted in no significant prediction, $F(4, 102) = 0.61, p > 0.05$. Addition of the 6-week HOME Inventory scores in the third block resulted in no improvement of prediction, $F(1, 101) = 0.32, p > 0.05$.

Thus, variables measured in the immediate postnatal period were not predictive of child development outcomes at 12-months. Results presented in Table 16 show that better maternal education correlated with better child development in all three measures of motor, cognitive, and behavioural development. Family income was positively correlated with mental and behavioural development but negatively correlated with motor development. Each developmental scale was negatively correlated with high baseline scores of stress, depression, and abuse potential and positively correlated with parent infant interaction at 6-weeks.
CHAPTER 5

Discussion and Conclusions

The present study was designed to evaluate the effectiveness of home visiting as an early intervention strategy for the prevention of child abuse and neglect. More specifically, the study sought to investigate the utility of a screening procedure for families in the immediate postnatal period for child abuse or neglect risk, determine social validity of the home visiting intervention programme from the immediate postnatal period, and assess the role of home visiting in influencing preventive health behaviours, parent-child interaction, adaptation to the parenting role, and child development. The study was also designed to investigate the role of perinatal variables as predictors of adjustment to the parenting role and child development. In all, five research questions/hypotheses were developed and tested in accordance with these aims and in the following discussion, the relationship of each research question or hypothesis to evidence the effectiveness of the home visiting intervention programme will be reviewed.

Utility of the Screening Procedure

The first research question to be tested was “Would a screening procedure used during the immediate postnatal period to identify families with child abuse or neglect risk factors demonstrate community utility?” This question was operationalised by measuring: (a) level of inclusion questionnaire return rate; (b) item refusal, that is, refusal to disclose detailed information of personal, family, and environmental characteristics; and (c) external validity by way of comparing prevalence rates of disclosure for personal, family, and environmental characteristics with other studies.

Response to the self-report inclusion questionnaire from women in the immediate postnatal period indicated willingness to disclose personal, family, and environmental characteristics. Willingness to disclose particular personal, family, and environmental characteristics varied among respondents to the questionnaire, with small overall response variations indicating inconsistent enthusiasm to disclose generally. For example, the majority of respondents were willing to disclose age,
parity, sole parent status, marital status, ethnicity, educational level, and childhood abuse, while fewer respondents were willing to complete questions related to income and domestic violence. The Health Services Working Party of the Domestic Violence Council (1991) identified that few women initially define themselves as abused. Correspondingly, respondents in the present study were somewhat less willing to disclose current issues of domestic violence than to disclose other family and personal history characteristics such as childhood abuse. Nevertheless, a high proportion of respondents to the inclusion questionnaire in this study did choose to complete questions related to domestic violence.

Incidence rates of domestic violence reported by respondents concurred with data from a well designed and comprehensive prevalence study of domestic violence undertaken at the recruiting hospital’s antenatal clinic (Webster et al., 1994). Using personal interview technique, a similar proportion of women disclosed issues of domestic violence during pregnancy in the Webster et al., study compared with the present study (8.9% compared with 7.2%). Thus, reporting levels achieved in the present study using self-report questionnaire were comparable with levels using personal interview method. It is therefore possible to conclude that when compared with previously reported prevalence rates of domestic violence in pregnancy, the marginally smaller proportion of reports found in the present study did not indicate marked response bias. In other words, differences were not found between respondents and non-respondents to the inclusion questionnaire for willingness to report domestic violence. Notably, hospital records at the time of recruitment to the present study were found to contain too few details to test this assertion empirically. Nonetheless, women were willing to disclose personal and family characteristics, even those related to domestic violence.

Importantly, the self-report questionnaire was given to women at a time when they were steeped in adapting to their role as a parent and at a time when a plethora of information was being presented to them. The fact that almost two thirds of these women took time to fill in the inclusion questionnaire and submit it to the ward receptionist gives an indication of the high acceptability of this approach to risk assessment in the immediate postnatal period. Thus, there are a number of procedural
details to be considered in interpreting this acceptance of the questionnaire. Firstly, a
detailed cover letter was attached with an addressed return envelope marked
"Confidential". Indeed, face-to-face interaction with the recruiting nurse may have
had a positive impact on the level of understanding that the questionnaire was to be
used for research purposes, and that confidentiality was assured. Furthermore,
commendable interpersonal skills of the recruiting nurse and her ability to quickly
build rapport with mothers in the immediate postnatal period undoubtedly enhanced
response rate and contributed to the interest shown in participation.

In summary, the high return rate of the inclusion questionnaire found in this
study indicated that risk for serious response bias was negligible. However, caution
must be applied when attempting to draw conclusions beyond the context of
recruiting for inclusion to a research project. As reviewed earlier, the ability to
identify vulnerable families in order to engage them in early intervention and
prevention programmes requires a cautious approach based on empirical evidence for
child abuse risk and resiliency factors. Results from this study indicate the
acceptability of the inclusion questionnaire as a research tool and the ongoing
refinement of its validity and internal consistency remains an area for future
evaluative research. These future studies are needed to examine use of the inclusion
questionnaire as a general screening instrument for use by health service providers.

**Social Validity of the Home Visiting Programme**

The next research question was "Would a home visiting intervention
programme, beginning in the immediate postnatal period and targeted to families
with child abuse or neglect risk factors, demonstrate high social validity as reflected
in terms of: (a) high participation rates; (b) high retention rates; and (c) high
satisfaction rates?"

**Consent to Participate**

When compared with characteristics of those who did not consent to
participate in the longitudinal trial, characteristics of consenting respondents
indicated that there was a relationship between willingness to consent to participate in
the trial of home visiting intervention and risk factors for poor adjustment to the
parenting role. A higher proportion of women who reported family characteristics which indicate vulnerability to child abuse and neglect gave written consent, reaching statistical significance for women who reported a history of psychiatric illness, and for women who reported financial stress. These results indicated that women identifying child abuse and neglect risk factors would seek support in the immediate postnatal period and that vulnerable women recognised the supportive role of home visiting services. The issues related to these findings will be considered with particular consideration given to those related to financial stress.

Financial stress was determined in this study by positive responses to the statements “often or always worried may not have food for family” or “often or always unable to make ends meet”. Interestingly, there was no statistical association between actual level of family income and consent to participate, independent of financial stress. Thus, it is possible to argue that stress related to financial disadvantage is not necessarily linked to low income and that regardless of income level, women in the postnatal period report financial concerns.

It is also important to reflect that during 1995 the proportion of women choosing to give birth in Queensland hospitals with public hospital status was 67.5% (Day et al., 1997). At the time of recruitment to the project, women had elected to have public or private status when admitted to hospital. The decision to have private patient status was usually determined by whether they had private health insurance, or could personally afford the cost of private hospitalisation. Nationally, the proportion of Australians with private health insurance declined to 34.3% in December 1995 from previously higher rates (Day et al.). It was from within this context that only women with public status were offered the opportunity to participate in the trial. Although this protocol excluded 32.5% of the total inpatient population, it included those without access to private health care, possibly with fewer resources to access wider community resources. As discussed in Chapter 1, a sense of deprivation and disadvantage in comparison with others places individuals at risk for violence as frustration and stress related to socioeconomic disadvantage may adversely effect family interactions. In consideration of these issues, it appears that women reporting child abuse and neglect risk factors were more willing to
participate in the trial than those who did not were. Simply, when approached to participate in a trial of home visiting by nurses, women whose children were potentially at risk for abuse and neglect were more likely to want to participate than others. This finding supports the view that although isolated and marginalised from traditional services, families at risk for child abuse and neglect potential can be targeted and engaged in prevention and early intervention programmes during the immediate postnatal period. Thus, home visiting by nurses has a high level of social validity as reflected in the relationship between willingness to participate in a trial of home visiting and risk for child abuse and neglect.

Retention in the Project

Characteristics of participants retained to the project to twelve months were compared with characteristics of participants who withdrew. Variables associated with retention to the project were poor parental attachment to the infant, and low maternal sense of competence as measured within two weeks of the infant’s birth. These results indicate that women with stress related to parenting during the first two weeks postpartum were more likely to remain in the project. Other preliminary stress and depression scores also indicated a higher level of early stress and depression for the group who completed. At the same time, younger, and more mobile mothers had a higher rate of withdrawal.

A number of issues are worthy of discussion to understand this somewhat inconsistent pattern of findings. Firstly, women reporting early difficulties in adapting to the parenting role were willing to participate in the trial for at least the first twelve months. This finding supported the prediction that stress related to the parenting role would heighten acceptance of home visiting by nurses. Nevertheless, teenage mothers were more likely to withdraw before the first 12-months of the trial than older mothers were, as were mothers with insecure housing. These findings may reflect that young mothers are already widely acknowledged as one group for whom services need to be targeted. When the range of community resources available to meet the perinatal needs for young women in the community were reviewed, it became apparent that appropriate, accessible, and adequate services were available to meet their needs. For example, Young Parents Programme (YPP) was developed as
an initiative of the social work staff from the Royal Women’s Hospital in 1987, providing health and support services to young parents. During the present study period, a fulltime midwife provided antenatal care and postnatal care for up to six weeks postpartum as part of the clinical outreach midwifery service of YPP.

Another support service, the Brisbane Youth Service (BYS) provided free assistance to homeless and disadvantaged young people in the inner city area. BYS assisted young people to facilitate integration into mainstream society by providing information, counselling, housing assistance, health services, and a family worker. The family worker visited young parents and their children to help them to work through parenting issues such as accommodation, childcare and relationships. A group for young parents facilitated by social workers was also organised through BYS as a strategy to provide health education and health promotion for those not wishing to attend YPP. Together, YPP and BYS provided a comprehensive range of acceptable services to young, homeless parents in the community within which the study was conducted. Thus, it is possible that the younger and more mobile mothers in the present study who chose to withdraw from the trial were accepting services from wider community services such as YPP and BYS. Conversely, these results may also indicate that young mothers with accommodation issues are underserved by health and other community services. The higher attrition rate of these mothers from this study accents the importance of accessible, appropriate services to meet their needs.

Service Satisfaction

One possible explanation for high levels of retention throughout the trial is that maternal satisfaction with the home visiting intervention programme contributed to willingness to participate throughout the first year of the infant’s life. Parents who received the home visiting intervention programme were clearly more satisfied than comparison group parents who accessed clinic-based services. However, retention rates for both intervention and comparison groups were similar, and although high satisfaction with the intervention programme may explain retention in the intervention group, it does not explain the similarly high retention rate to the trial for the comparison group.
The most likely explanation for this similarity would seem to be that visits to the home by research assistants to collect data were viewed positively by participants from both intervention and comparison groups who remained in the trial to twelve months. Participant comments and willingness to receive home visits for the collection of data reflect that participants were willing to help with the study and that there was an altruistic sense of helping others through their own participation. Specifically, participants commented that they supported the idea of evaluating home visiting services, particularly participants who were experiencing dissatisfaction with clinic-based services, or who lacked adequate resources to access the clinics. Others commented that participation in the study had been helpful to them. For example, opportunities to reflect on their parenting style and feelings about the child and parenting during completion of research questionnaires were viewed positively. These data concur with Oakley's (1992) study of women's experience of taking part in a study of social support. That study found a positive evaluation of the research as a whole by both intervention and comparison groups, because the majority of participants experienced participation as beneficial to both self and their infants.

Taken together, consent to participate, retention to the project and satisfaction results supported the social validity of home visiting by nurses and demonstrated a positive relationship between willingness to consent to participate in a home visiting intervention programme beginning in the immediate postnatal period and risk factors for child abuse and neglect. Respondents to the inclusion questionnaire who reported characteristics associated with child abuse and neglect risk were more likely to consent to participate in the trial from the immediate postnatal period. Over time it was found that mothers reporting early difficulty adjusting to the parenting role, that is, with high depression and parenting stress scores soon after bringing the newborn home from hospital were more likely to be retained both in the intervention programme and comparison groups. Finally, levels of satisfaction with the intervention programme were high, and the majority of participants viewed participation in the research trial positively.
Effectiveness of the Home Visiting Programme

Thirdly, it was hypothesised that compared with a comparison group, a home visiting intervention programme would be associated with: (a) lower rates of maternal depression, parenting stress, and child abuse potential; (b) higher scores for home environment and parent-child interactions observed in the home; (c) higher levels of parental knowledge and practice of child safety and preventive healthcare; and (d) higher ratings of children’s cognitive, motor, and behavioural development at 12-months.

The definition of what constitutes success for home visiting programmes has varied between and within communities. This study focussed on the extent to which improvement in family and child health outcomes occurred for parents, predominantly mothers, adjusting to the parenting role over time. It was held that development of a relationship with the mother would result in improved self-efficacy and reduced depression, parenting stress, and child abuse potential, allowing her to buffer stress and provide a better quality environment for her infant. This would be evidenced by preventive behaviours of parents for their infants, secure attachment, and more nurturant behaviours and structured time with the child.

The percentage of women with EPDS scores above the clinical threshold of twelve was greater in the comparison group than in the intervention programme group at baseline, 6-weeks, and 12-months. The difference reached statistical significance at 6-weeks. The extent or significance of these differences in EPDS scores over time was accounted for by a reduction in mean EPDS scores for first time mothers in the intervention programme group between baseline and 6-weeks. In other words, an intervention programme effect for reducing the symptoms of postnatal depression was shown for first time mothers. This reduction of EPDS scores was maintained at 12-months, although EPDS scores for Primiparas in the comparison group at 12-months had reduced to similar levels as found for Primiparas in the intervention programme group at 6-weeks and no statistically significant difference was found. This pattern of findings supports, in part, the hypothesis that compared with nonintervention or clinic-based child health service provision only, the home visiting intervention programme would reduce symptoms of maternal
depression. Notably however, the significant effect of reducing EPDS scores was demonstrated only for Primiparas and although the EPDS scores reduction was maintained to 12-months, group differences were no longer shown as comparison group scores had reduced to similar levels.

Holden (1996) argues that although there is a strong relationship between early postpartum mood and postnatal depression, significant proportions of women score above the clinical threshold for up to 6-weeks postpartum, indicating that the EPDS is more a measure of emotional adjustment than depression in the early postnatal period. Thus, EPDS results from the present study support the assertion that first time mothers receiving the intervention programme demonstrated improved emotional adjustment compared with first time mothers in the comparison group. In other words, the intervention programme was successful in providing early identification and intervention for prevention of poor emotional adjustment within the first 6-weeks of giving birth, particularly for Primiparas. Although a small proportion of Primiparas in the intervention programme group went on to report symptoms of postnatal depression at 12-months, a similar proportion in the comparison group was found. Generally low EPDS scores gained by Primiparas in both groups at 12-months indicates that there may have been a baseline effect.

Likewise, predicted differences between groups were found at 6-weeks for the parent’s sense of competence subscale of the PSI and the total PSI scale. There was a statistically significant reduction in parent’s sense of competence scores for Primiparas in the intervention programme group. Differences were no longer statistically significant at 12-months. High scores for the parent’s sense of competence subscale indicate that parents lack practical child development knowledge or that they possess a limited range of child management skills. High scores are also found when parents find the parental role unexpectedly demanding. Thus, first time mothers receiving the intervention programme had sufficient skills and knowledge of practical child development and infant management to reduce stress related to the parenting role at 6-weeks, whereas first time mothers in the comparison group did not demonstrate these attributes until 12-months. The issues discussed in relation to EPDS results are equally relevant to PSI results in this study.
For first time mothers, positive intervention programme effects on maternal adjustment to the parenting role were demonstrated at 6-weeks, whereas 12-months results demonstrate comparable improvement in maternal adjustment for the comparison group. The intervention programme group participants gained knowledge of child development and child management skills during the early postnatal weeks while the comparison group participants developed knowledge and skills later in the first year of their infant’s life. As previously discussed, early adaptation to the parenting role, and parenting knowledge and skill acquisition bodes well for parent-infant attachment and the children’s long-term health and developmental outcomes.

With respect to the measurement of potential for physical child abuse, the results do not support the hypothesis that the home visiting intervention programme would achieve lower rates of child abuse potential compared with nonintervention or clinic-based services only. Simply, there were no statistically significant group differences at 18-months follow-up when both baseline abuse scale scores and parity were used as independent variables to account for baseline group differences. Nonetheless, separate analysis of the two groups revealed a specific intervention effect on physical child abuse potential.

No differences were found between first time and experienced mothers for CAPI abuse scale score in the intervention programme group, however, the pattern of findings was not consistent between the intervention programme and comparison groups. Specifically, an overall reduction was found in abuse scale scores for the intervention programme group at 7-months that was statistically significant and although there was no further reduction at 18-months follow-up, the reduced levels were maintained. No significant effects were found for parity with relation to these results. In the comparison group on the other hand, a reduction between baseline and 7-months CAPI abuse scale score that was statistically significant was found for Multiparae only. This reduction was followed by an increase in CAPI abuse scale score at 18-months follow-up that was statistically significant.

Thus, these results do not support the hypothesis that the home visiting intervention programme would achieve lower rates of child abuse potential compared
with a comparison group. Both groups reduced by the same amount, however, the statistically significant reduction in CAPI abuse scale score found for the intervention programme group during the first seven months postpartum and maintenance of the reduced scores may have indicated that the home visiting programme fulfilled its aim to reduce child abuse potential at least for first time mothers. As previously discussed, the CAPI distinguishes parents having difficulty with interpersonal and intrafamilial relationships who may experience high levels of stress related to parenting. The CAPI also correlates positively with measures of psychological distress, indicating that the home visiting intervention programme impacted on stress related to immediate social support and psychological wellbeing. Conversely, the early reduction of CAPI abuse scale score gained by Multiparae who did not receive the intervention programme was not maintained and a significant rise at 18-months indicated that child abuse potential for this group of parents had increased as infants were becoming toddlers.

Interestingly, dissimilar scores for parents with older children and first time parents are expected, as Milner (1986) reports that non-parenting respondents to the CAPI earn higher scores than respondents with children. This implies that CAPI subscale scores for Primiparas improve more dramatically than scores for Multiparae over time because their scores are expected to be higher at baseline and improve as they become experienced as parents. In addition, some CAPI subscale scores measure characteristics that are unlikely to be modified, and their use in assessing intervention effectiveness is therefore limited. Nonetheless, in the present study it was used as one of a number of measures of effectiveness, balancing this particular weakness of the CAPI.

Clearly, there is consistency between findings discussed so far from the EPDS, the PSI, and the CAPI. Each of these measures was used to test the hypothesis that compared with nonintervention or clinic-based child health service provision only, a home visiting intervention programme would achieve lower rates of maternal depression, parenting stress, and child abuse potential, that is, higher rates of parent and family functioning. These results do not support the hypothesis as early intervention programme benefits of reducing maternal depression, parenting stress,
and child abuse potential did not result in statistically significant differences between the two groups. Simply, at 12-months and 18-months, comparison group scores had reached levels similar to those experienced much earlier by the intervention programme group which maintained improved levels of maternal adjustment to the parenting role to follow-up. Thus, there were no statistically significant group differences at 12-months or 18-months follow-up. Regardless of the earlier parenting adjustment, improved skills and knowledge of practical child development and infant management, reduced stress related to the parenting role and physical child abuse potential found in the intervention group, the fact remains that these results do not support the hypothesis tested.

It was further hypothesised that compared with nonintervention or clinic-based child health service provision only, a home visiting intervention programme would achieve higher scores for home environment and parent-child interactions observed in the home. At 6-weeks, between group comparison of HOME Inventory subscales and for the total HOME Inventory score clearly supported this hypothesis by demonstrating that the intervention programme gained higher scores that were statistically significant for each scale except for the scale measuring opportunities for variety in daily stimulation compared with the comparison group. At 12-months, the significance of these differences was not maintained and there were no statistically significant differences between groups for either HOME Inventory subscale scores or total scores. Again, this resulted from the extent of improvement in comparison group scores between 6-weeks and 12-months, rather than deterioration of intervention programme group HOME Inventory scores. These results are consistent with the findings from EPDS, PSI, and CAPI data in that by 12-months, comparison group scores reached similar levels of adjustment experienced by the intervention programme group earlier.

The next section of this hypothesis stated that compared with nonintervention or clinic-based child health service provision only, a home visiting intervention programme would achieve higher levels of parental knowledge and practice of child safety and preventive healthcare. Although the educational component of the home visiting nurses’ intervention clearly focussed on the establishment and maintenance
of breast feeding, home safety, SIDS risk assessment and prevention, immunisation against childhood diseases, and managing sick children, no statistically significant differences between groups were found in related health care knowledge or practices.

Thus, predicted differences between the groups were not found at 6-weeks for preventive health behaviours of parents for their infants, nor at 12-months for perceptions of infant feeding and sleeping patterns. With respect to home safety and knowledge of injury prevention, four children in the comparison group had ingested poison compared with none in the intervention programme group. Parental action for prevention of childhood ingestions was influenced by the home visiting intervention programme and this particular finding is consistent with the Kitzman et al., (1997) trial, which demonstrated that home visiting by nurses influenced the prevention of childhood injury and ingestions. The finding that parents assigned to the comparison group were significantly more likely to administer medication to their young children without medical advice indicates that the home visiting nurses were successful in attempting to educate parents in the care of sick children. However, there was no evidence to support that the nurses were successful in improving the use of other community services, including use of medical health care services at either 6-weeks or 12-months.

Importantly, results from the present study highlight the premise that knowledge alone is not sufficient to promote preventive health actions of parents for their children. Although individual instruction in a home-setting provides an efficient method of health education delivery, especially for parents with a range of educational needs, the success of the media campaign to reduce SIDS risk in the community during the present trial suggests that the use of a range of health education strategies would have contributed to a higher rate of preventive health behaviours of parents for their children. It is also important to note that the educational component of the intervention programme did not presuppose or imply a strategy for behaviour change or beliefs modification, and that its influence on preventive health actions relied on promoting self-efficacy and enhancing parent-infant attachment alone. It must therefore be recognised that health education is not synonymous with behaviour change.
The hypothesis stating that compared with nonintervention or clinic-based child health service provision only, a home visiting intervention programme would achieve higher ratings of children’s cognitive, motor, and behavioural development at 12-months was clearly not supported by results from this study. No group differences were found for the mental development index, psychomotor development index, or the behaviour rating scale. Equivocal results have previously been reported on the ability of intensive home visiting programmes to influence infant development when measured by the Bayley Scales of Infant Development. For example, Black, Dubowitz, Hutcheson, Berenson-Howard, and Starr (1995) reported an intervention effect on receptive language in a trial of home visiting targeting children with failure to thrive. On the other hand, a study by Raynor, Rudolf, Cooper, Marchant, and Cottrell, (1999) did not find any intervention effect on child development in a similar trial. One possible explanation for the failure to identify differences between groups in the present study is that the measures were characterised by a wide range of scores that were all within normal ranges for young children. Thus, there may have been variations within range for normal on each scale that were not detected, which made differentiation difficult. The hypothesis could be better tested on children at a later stage of their development when parameters for normal range narrow. However, this hypothesis was not supported by the study.

There are a number of issues to consider in understanding this pattern of findings. The use of other services outside the programme (for intervention group families) or the clinic (for comparison group families), did not differ between the groups and therefore does not account for any reduction of programme effect by enhancing the progress made by comparison group families. Arguably, the ability of this study to evaluate the effectiveness of the home visiting intervention programme was compromised because like many other similar community programmes that are organisationally very complex, a range of contextual factors may have influenced programme outcomes. Investigators do not usually present contextual factors in journals because of space restrictions or the anecdotal nature of the findings. However, the articulation of contextual factors benefits interpretation of results.
Thus, some programme variations that occurred in this study will be presented briefly.

To begin with, unexpected nursing staff turnover during the visiting schedule meant that families allocated to the intervention programme occasionally received visits from unacquainted visitors. Specifically, families were divided equally between two primary nurses initially, but as the caseloads diminished (with infants reaching their first birthday), only one of these nurses was allocated to each remaining family. Some families were visited by three different nurses throughout the first year of their infant’s life, with the relief nurse visiting families assigned to either one of the two primary nurses taking leave during the first few weeks of the project. Thus, it is possible that the aim of establishing and maintaining a relationship of trust with families was compromised due to the home visitors being replaced as needed. This is an important consideration as recruitment and retention patterns of community health staff may mediate the success of home visiting programmes. In addition, adjustment to the parenting role in the comparison group may have somehow been biased by the relative impact of regular contact with researchers during data collection in the home. In a research context, this would seem to be an unavoidable confounding variable and one, which in this study potentially influenced the outcomes in an unknown direction. That is, the effect may have been to either diminish or enhance parenting adjustment. Finally, for families recruited towards the end of the project, the home visiting programme was phasing out at the 12-months assessment. As Pharis and Levin (1991) argue, isolated at-risk parents may develop enduring dependent relationships with service providers. For some families this could, in part, have had a transitory impact on parenting stress and maternal depression because intervention programme families were adjusting to parenting without the support of their home visiting nurse. Thus, stable and continuous funding of the home visiting programme may have resulted in more enduring programme effects.

Predicting Adjustment to the Parenting Role

This hypothesis predicted a relationship between maternal, family and environmental factors identified in the immediate postnatal period and adjustment to
the parenting role at 12-months and 18-months. For the purposes of testing this hypothesis, adjustment to the parenting role was measured by the EPDS, PSI at 12-months, and the CAPI at 18-months.

Measures for screening postnatal depression, physical child abuse potential and parenting stress in the immediate postnatal period predicted level of EPDS scores at 12-months, outweighing maternal age, education, family income level and domestic violence. Education level, the presence of domestic violence and elevated parenting stress screening scores predicted elevated PSI scores at 12-months. Prediction afforded by the baseline PSI subjugated prediction from the other variables revealing its strength to predict for parenting stress at 12-months and when removed from the prediction model, mothers with limited education, elevated baseline CAPI and PSI scores, and low 6-week HOME Inventory scores were at risk for elevated PSI scores at 12-months. Finally, elevated CAPI scores at 18-months were predicted by high PSI scores in the immediate postnatal period.

As previously identified within this thesis, the interactions of personal and social systems factors that predispose to parenting stress and family dysfunction is complex. Although each of the measures of parental adjustment theoretically evaluate a unique construct, these constructs are highly correlated. Thus, it is not an unusual finding that parents with a high score on one measure have a high score on the other measures. Similarly, it is reasonable to assume that parents with high (or low) scores at baseline would be parents with high (or low) scores at 12-months. The more interesting and important finding in this study was the absence of any predictive value to the demographic factors, which secondary prevention efforts typically target. Thus, these results not only demonstrate that there is a relationship between maternal, family and environmental factors identified in the immediate postnatal period, and adjustment to the parenting role, but also challenge demographic targeting for child abuse and neglect risk.

**Predicting Children’s Cognitive, Motor, and Behavioural Development**

The final hypothesis tested by this study predicted a relationship between maternal, family and environmental factors identified in the immediate postnatal period and children’s cognitive, motor, and behavioural development at 12-months.
This hypothesis was not supported by the findings of the present study as variables measured in the immediate postnatal period were not found to be predictive of child development outcomes at 12-months. The complex interaction of risk and protective mechanisms and the interdependence of biological factors and care-giving environments on infant development during the first year of life must not be underestimated when considering these results. Moreover, inconsistency of outcomes from this trial precludes interpretation of the relationship between factors measured in the immediate postnatal period, and children’s development in this study.

Summary of Findings

This study primarily aimed to evaluate a preventive and early intervention approach to child abuse and neglect using home visiting as a strategy. The need for further experimental support for home visiting models of early intervention and prevention of child abuse and neglect was identified from a comprehensive review of the evidence for contextual variables influencing adjustment to parenting. Successful preventive and early intervention strategies realised to date have been conducted with selected, targeted populations, and this study sought to offer a unique contribution to the literature by evaluating a team approach using nurses, social workers, and parent aides to visit families selected for child abuse and neglect potential in the immediate postnatal period. The research design required self-identification into the study by providing positive responses to a range of risk factors. This procedure was shown to have utility in the context of recruitment to a research trial in that respondents were willing to disclose sensitive personal issues such as domestic violence and history of childhood abuse. Its application as a general screening instrument for use by health service providers however, calls for a cautious approach. It was beyond the scope of this study to analyse the profile of non-respondents, so that details of their characteristics remain unknown. Nevertheless, respondents were unlikely to self-identify inaccurately, so that the objective to identify risk factors was met at least for respondents, whose characteristics were apparently identified by this measure. Further, the intense home visiting examined by this study was shown to have social validity, with mothers willing to accept this form of intervention from the immediate postnatal period. The high retention and satisfaction rates strengthen this conclusion.
From as early as 6-weeks, the program demonstrated ability to impact positively on maternal, family, and home environment variables. At 6-weeks, a significant intervention effect was shown for first time mothers on measures of maternal mood adjustment, competence with parenting, and global parenting stress. Maternal-infant interactions were more likely to be positive, with significantly higher (better) scores in aspects of the home environment related to optimal development in children, particularly maternal-infant attachment. Also, intervention group mothers overall were significantly more satisfied with the community child health service. Likewise, at 7-months, a significant intervention effect was found for reducing physical child abuse potential for both first time and experienced mothers, which was maintained to follow-up at 18-months.

However, no intervention effect was demonstrated at 12-months or 18-months follow up, with no significant differences between intervention and comparison groups. Nonetheless, it would be premature to abandon this form of prevention and early intervention for child abuse or neglect on the basis of these results. Concordance between intervention and comparison group outcomes has been demonstrated in previous longitudinal studies of the effectiveness of home visiting and other early intervention/prevention programmes targeting vulnerable families. For example, evaluation of Hawaii’s Healthy Start programme (Duggan et al., 1999) showed no overall positive programme impact after two years of intervention. Key maternal and child outcomes benefiting from programme intervention in the short-term showed no longer-term benefits at two-year follow up. Likewise, while there was strong evidence for the national United States’ Head Start programme to positively influence cognitive, social, and physical development of children in the short-term, studies testing the impact of longer-term effectiveness reported equivocal results (Devaney, Ellwood, & Love, 1997). The Olds et al., (1986a) trial of home visiting by nurses for the prevention of a wide range of child health and developmental outcomes as well as maltreatment provided strong evidence for preventive effects of home visiting by nurses during the first two years of life in maternal and child health outcomes and child protection. Ensuing review indicated that the home visiting programme positively influenced many other variables
longitudinally including rates of subsequent pregnancies, maternal participation in
the workforce, and that the programme reduced government spending on low income
families with children under two years of age (Olds, et al., 1986b). In contrast
however, group differences shown throughout the first two years of the trial in the
incidence of child abuse and neglect were no longer apparent during the two year
period after the programme ended (Olds, Henderson, & Kitzman, 1994). These
results indicate the importance of testing programme effects over time as in each of
these studies long term evaluation has revealed significant ‘sleeper’ effects during
the adolescent years of the home-visited infants (Olds, et al., 1998).

A secondary aim of this study was to determine whether adjustment to the
parenting role could be predicted from maternal and family assessment in the
immediate postnatal period. This is a time when parents are steeped in the reality of
parenthood, presenting an opportunity for community service providers to offer
support to families. Predictors of poor adjustment to the parenting role evidenced by
high stress related to the parenting role, maternal mood, and beliefs associated with
child abuse potential were examined. Having high pretreatment PSI, EPDS, and
CAPI scores was associated with enduring difficulties adjusting to the parenting role,
whereas demographic factors showed no predictive value. Additionally, having
positive parent-infant interactions and providing a home environment conducive to
optimal development and well-being of the child were predictive of positive
adjustment to the parenting role. Thus, the ability to identify depression levels, stress
levels, and coping skills of all new parents would offer a possibility for preventing
some cases of child abuse and neglect in this community. For community child
health nurses undertaking routine home and family appraisals in the postnatal period,
these aspects of assessment are important. The research presented in this thesis and
elsewhere indicates that community practitioners would be best advised to assess
these variables rather than make intuitive assumptions of risk. Future research will
determine the social validity of such assessment.

Strengths and Limitations

A number of recommendations for future research and practice will be
proposed on the basis of these findings, but first a summary of the strengths and
limitations associated with this study will be considered. Firstly, utility of the screening tool and social validity of the programme demonstrated by this study implies that home visiting in this community is accepted without stigma. A high level of acceptance and support for this trial was also received from clinical, general, and administrative staff of both the recruiting hospital and the community child health service organisations involved. There is strong interest, commitment, and support for testing the efficacy of prevention and early intervention strategies before their implementation in this community. Before addressing the limitations associated with this study, it is important to recognise that one of its major strengths was its attempt to identify specific programme components, and to determine which, if any, have positive potential, and which do not. Home visiting programmes contain many components, which tend to vary across programmes that are assumed to be similar in type. This thesis has provided an opportunity to explore these components in some detail.

Bearing these strengths in mind, it is important to outline limitations associated with this study. As previously discussed, political and economic contexts within which the research was undertaken impinged on the ability to apply theoretical tenets in the community setting. The most important of these limitations is failure of the study to measure the extent to which effectiveness of the programme relied on programme implementation and the training of visitors. In depth observation and analysis of nurse/parent and nurse/family interactions was beyond the scope of this study and future research is needed that examines the applicability of the home visiting model beyond its application in a research trial. These constraints are not novel in this field and have previously been identified by a number of research reports reviewed in this thesis. In planning for this study, it was expected that prudent selection of visitors and weekly interdisciplinary case conferencing would provide a template for staff selection and training. However, future studies may determine the effectiveness of the model. Further, insufficient funding to support visiting beyond the first twelve months of life, together with instability of staff availability may have threatened the relationship between home visitors and families. As reviewed in Chapter 2, professional home visiting to
vulnerable families has a high rate of success in improving parenting and child health outcomes when a two-year intensive schedule is followed. This level of intensity was not experienced in the present study. Next, this study would have been improved by measuring maternal life course outcomes as home visiting has demonstrated an ability to impact on these variables (maternal employment, pregnancy spacing) in an enduring way (Olds et al., 1986b; Olds, Eckenrode, et al., 1997).

Finally, the ability of this study to evaluate the programme was compromised somewhat by the fact that criteria for inclusion were based on risk factor analysis undertaken in a similar, but different community. Moreover, results from the predictive analyses in this study indicated that stress related to the parenting role, rather than demographic factors reported in the immediate postnatal period were indicative of poor parental adjustment later on. In light of these results, further research is needed to determine whether the programme had a stronger effect among those who were initially at higher psychosocial risk as determined by baseline assessment. Also, participation required the ability to comprehend and complete self-report questionnaires. It must be acknowledged that illiteracy may impede the ability to adapt to the parenting role, and that non-English speaking (NESB) mothers in Australia may experience unique problems during adjustment to parenting. Results from this study cannot be generalised to these populations.

Recommendations

Implications for Future Research

On the basis of these results, and considering the study’s strengths and limitations, a number of recommendations for future research may be made. To begin with, this study has indicated that more research is needed to determine resiliency factors, in other words, factors that protect parents and families from the outcomes associated with identified risk factors. Thus, it would be valuable to replicate the work of Browne and Herbert, (1997, p. 118) in this community using discriminate analysis of those predicted to abuse, incorporating variables thought to provide protection from the risk factors. A more difficult task would be to refine the research so that high-risk families not identified by the screening procedure would be
identified in some other way. It would be interesting, for example, to repeat the present study using a sample of mothers reporting high scores for postnatal depression and parenting stress in the immediate postnatal period, despite their socioenvironmental characteristics because previous research (including the present study) has concentrated on effectiveness of home visiting programmes targeting demographic, family, and socioenvironmental factors.

This study has also identified a need for evaluation of the effectiveness of further education and staff development for nurses embarking on a career in home visiting, prevention, or early intervention strategies for child abuse and neglect. Specifically, the extent to which this interdisciplinary model of home visiting could be taught and consistently implemented should be evaluated with analysis of the nature of interactions between home visitors and families in the home environment.

Clearly, the particular needs of male partners in home visiting programmes, and evaluation of the effectiveness of applied strategies must be addressed by future research. Male partners within families participating in this trial of home visiting expressed concern for a perceived lack of support experienced within the wider community of their unique parenting needs. Although this provides anecdotal evidence only, growing interest is being paid to men’s needs in the area of child abuse and neglect prevention. In particular, more research is needed to determine: (a) what influences men’s adjustment to parenting; (b) how and when to engage men in supportive programmes; (c) how to retain them in early intervention and prevention programmes; (d) how to staff home visiting programmes for men; and (e) how their needs can be met. Similarly, there is scope for further research related to the needs of illiterate, NESB, and Indigenous families in home visiting programmes.

**Implications for Future Practice**

In terms of future directions for community child health practice, a number of recommendations may be made. To begin with, social validity of home visiting in this community is upheld by the study’s results. Thus, it is important that future screening for targeted home visiting programmes is undertaken in an ethical and non-discriminatory manner. A non-stigmatising approach is essential, with objective routine home and family assessments undertaken as a matter of course. Screening for
postnatal depression, parenting stress, and coping skills of parents with newborns needs to be undertaken sensitively, and for the unique purpose of providing extra support in maternal adjustment to parenting rather than surveillance of child abuse and neglect. Nurses, valued for their understanding of maternal and child health needs would seem to be in the best position for this task.

Next, organisations providing home visiting to families must provide adequate safety standards for nursing and other staff. This may involve contracting with security firms or community police services to be available for staff if required during home visits. This leads to the point that programmes need a stable funding base. Attention must also be paid to the recruitment and replacement of staff, so that the relationship between staff and families is not compromised. Attention to staff development with particular emphasis on family assessments is also needed.

There are a number of groups of individuals whose adjustment to the parenting role may require the support of home visiting or other supportive services. To begin with, programmes must emphasise development of fathers' parenting skills and knowledge, and acknowledge the importance of supporting their adjustment to the parenting role. Similarly, culturally appropriate strategies for use with illiterate, NESB, and Indigenous Australian families, young mothers, and those who are mobile within and between communities need to be determined.

Finally, promotion of wider community resources and appropriate utilisation of existing services was not successfully achieved in this study. These services need to be evaluated in terms of their own social validity, and ability to engage families in need of parenting support. The way in which these services are then promoted may need to involve closer collaboration between home visiting staff and community services staff.
References


Browne, K., & Saqi, S. (1988). Approaches to screening for child abuse and neglect. In K. Browne, C. Davies, & P. Stratton (Eds.), *Early prediction and prevention of child abuse* (pp. 57-85). Chichester: John Wiley & Sons Ltd.


Roberts, J. (1988). Why are some families more vulnerable to child abuse? In K. Browne, C. Davies, & P. Stratton (Eds.), *Early prediction and prevention of child abuse* (pp. 43-56). Chichester: John Wiley & Sons Ltd.


Tick one box only unless otherwise indicated. (Numbers beside the boxes are for office use only). A space has been provided at the end of the questionnaire for any comments you may wish to make on any items or any other issue you wish to raise.

Q1 Your age in years last birthday __________________

Q2 Is this your first child?

☐ (1) Yes ☐ (2) No

Q3 Your marital status:

☐ (1) Single ☐ (3) Defacto ☐ (5) Separated
☐ (2) Married ☐ (4) Widowed ☐ (6) Divorced

Q4 Are you a sole parent?

☐ (1) Yes ☐ (2) No

Q5 Over the past two years, how many times have you moved address?

☐ (1) Never ☐ (2) Once ☐ (3) Twice
☐ (4) 3 times ☐ (5) More than 3 times

Q6 At present, are you worried that you may not have a home for you and your baby?

☐ (1) Yes ☐ (2) No

You may wish to comment .........................................................

Q7 How often are you worried about having enough money to get essential food for yourself and family?

☐ (1) Never ☐ (3) Sometimes ☐ (5) Always
☐ (2) Rarely ☐ (4) Often
Q8 Please indicate your highest education level from the list below

☐ (1) Completed Year 12 or more  ☐ (5) Some Primary School
☐ (2) Completed Year 10  ☐ (6) Did not go to school
☐ (3) Some High School  ☐ (7) Special School
☐ (4) Completed Primary School

Further education completed ________________________________

Q9 What country were you born in? ________________________________

Q10 What country was your partner (if applicable) born in? ________________________________

Q11 Do you identify yourself as an Aboriginal or Torres Strait Islander?

☐ (1) Yes  ☐ (2) No

Q12 What is your family income before tax (including pensions and allowances)?

☐ (1) Less than $172 per week (less than $9,000 pa)
☐ (2) $173 to $307 per week ($9,001 to $16,000 pa)
☐ (3) $308 to $498 per week ($16,001 to $26,000 pa)
☐ (4) $499 to $958 per week ($26,001 to $50,000 pa)
☐ (5) Over $958 per week (over $50,000 pa)

Q13 How often are you worried about not having enough money to make ends meet?

☐ (1) Never  ☐ (3) Sometimes  ☐ (5) Always
☐ (2) Rarely  ☐ (4) Often

SUPPORT NETWORK

Q14 Do you have friends or family (besides your partner if applicable) who you can ask for help?

☐ (1) Yes  ☐ (2) No

Please comment if you wish ________________________________
Q15  My (and if applicable, my partner's) closest support people are:  *(Tick as many boxes as you need to here)*

- ☐ (1) Mother/Father/Step-parent
- ☐ (2) In-Laws
- ☐ (3) Aunt/Uncle
- ☐ (4) Sister/Brother
- ☐ (5) Other family
- ☐ (6) Friends
- ☐ (7) Other ______________________

Q16  Will these support people be available to help you and your partner (if applicable) following the birth of your baby?

- ☐ (1) Yes  ☐ (2) No

Please comment if you wish  ..............................................................

Q17  Was this pregnancy

- ☐ (1) Planned?  ☐ (2) Unplanned?  ☐ (3) Planned, but just "not now"?

Q18  When you first found out that you were pregnant, did you seek a termination (abortion) of this pregnancy?

- ☐ (1) Yes  ☐ (2) No

Q19  Did you have any antenatal care for this pregnancy?

- ☐ (1) Yes  ☐ (2) No  If no, go to Q21

Q20  How many weeks pregnant were you when you made your first appointment with a doctor/midwife/antenatal clinic?

__________________ weeks

FAMILY HISTORY

Q21  Have you ever had counselling or other treatment for a psychiatric illness such as:

- ☐ (1) Depression  ☐ (2) Anxiety  ☐ (3) Schizophrenia
- ☐ (4) Other (please specify) ..............................................................
- ☐ (5) No, I have never had such treatment
Q22 Have you ever suffered from post natal depression after the birth of a previous child?
☐ (1) Yes  ☐ (2) No  ☐ (3) Not Applicable

Q23 Has your partner ever had counselling or other treatment for a psychiatric illness such as depression/ anxiety/ or schizophrenia
☐ (1) Yes  ☐ (2) No  ☐ (3) Don't know

Q24 How often do you use:

* Benzodiazepines (such as Valium, Serepax, Rohypnol) *
☐ (1) Never  ☐ (2) Rarely  ☐ (3) Sometimes  ☐ (4) Regularly

* Marijuana (cannabis, grass) *
☐ (1) Never  ☐ (2) Rarely  ☐ (3) Sometimes  ☐ (4) Regularly

* Amphetamines (Speed, Ecstacy) *
☐ (1) Never  ☐ (2) Rarely  ☐ (3) Sometimes  ☐ (4) Regularly

* Heroin *
☐ (1) Never  ☐ (2) Rarely  ☐ (3) Sometimes  ☐ (4) Regularly

* Methadone *
☐ (1) Never  ☐ (2) Rarely  ☐ (3) Sometimes  ☐ (4) Regularly

Q25 How often do you drink more than 2 standard alcoholic drinks (such as a 10oz beer, glass of wine, spirit drink)
☐ (1) Never  ☐ (5) 4 days a week
☐ (2) 1 day a week  ☐ (6) 5 days a week
☐ (3) 2 days a week  ☐ (7) 6 days a week
☐ (4) 3 days a week  ☐ (8) 7 days a week
Q26  Do you experience any form of abuse from a partner or family member at home such as

(Tick as many boxes as you need to here)

☐  Physical abuse
☐  Damage to your property
☐  Verbal abuse
☐  Threats to hurt you
☐  Allowed no money
☐  Being kept away from family or friends
☐  Other (please specify) .............................................................

Q27  How often are you hit, slapped or otherwise physically hurt in arguments at home?

☐ (1) Often       ☐ (3) Rarely
☐ (2) Sometimes   ☐ (4) Never

We would like you to feel free to comment ...........................................

Q28  Were you abused as a child?

☐ (1) Yes       ☐ (2) No

We would like you to feel free to comment ...........................................

Q29  Was your partner abused as a child?

☐ (1) Yes       ☐ (2) No       ☐ (3) Don’t know

We would like you to feel free to comment ...........................................

Thank you for completing the questionnaire. If you would like to comment further on any of your responses or raise other issues, please do so in the space below.

.................................................................
Appendix B
CONSENT TO PARTICIPATE

1. I give permission to be interviewed soon after discharge from hospital and when my baby is 6 weeks, 4 months, 7 months, 12 months and 24 months old, and to complete a number of questionnaires.

2. I give permission for my child's growth and development to be assessed by the Research Officer at 6 weeks, 4 months, 7 months, 12 months and 24 months old.

3. I give permission for a nurse from Community Child Health to contact me to offer child health services.

4. I understand that I am free to refuse to answer any questions, and am free to withdraw my consent and terminate my participation in the project at any time, without comment or penalty.

5. I understand that my identity will be kept confidential at all times and that no identifiable information about me or my child will be disclosed in the evaluation of the project.

6. I give permission for any information pertaining to the health/welfare of myself or my child from the identified organisations listed below, to be made available to the Project Coordinator.

   i) Community Child Health Service, Brisbane North Regional Health Authority
   ii) Royal Women's Hospital, Brisbane North Regional Health Authority

7. I understand that the Research Officer will act to assist both myself and/or my child should concerns regarding our health/safety be identified.

8. I understand that I may contact the Senior Research Officer (phone no.) or the Secretary of the Queensland University of Technology, Research and Ethics Committee (phone), if I have any concerns.

________________________________________  ______________________________________
Research Officer                           Date

________________________________________  ______________________________________
Senior Research Officer                    Date

I,

  (Name)

of

  (Address)       (P/Code)       (Phone No.)

agree to participate as a volunteer in this project.

________________________________________  ______________________________________
Your signature                           Date
Dear Parent

Our service, the Community Child Health Service, has cared for the health of new families, particularly mothers and babies for many years.

The arrival of a new family member is both a joyful and stressful event in all families. We are asking for new mothers to be part of a parenting project that looks at common issues and concerns of parenthood and child health care. If you do wish to participate in this research project, please understand that your assistance will be highly valued as we need to learn about how the Community Child Health Service may best be able to help you and your family. All families participating in the project will be contacted regularly by the project officer for the first six months of your baby's life.

We would like you to complete the attached questionnaire, knowing that the information you provide about yourself and your family will remain strictly confidential. For a six month period we are giving the questionnaire to ALL women in this ward soon after the birth of their baby as we want to learn about family concerns and problems. This will help us to learn more about the needs of families in the Brisbane North Health Region.

If you think you may be interested in helping us by participating in the project, please indicate on the consent form provided with the questionnaire.

Yours faithfully

FIELD
Dear Field (name)

Thank you for consenting to participate in the Family CARE Project and for completing Questionnaire 1 while you were in hospital. Your interest in our project is sincerely appreciated. However, I regret that we will not be able to include you and your family.

Please use our Child Health Service for support, education and assistance in parenting, feeding and infant management as you see fit. Your nearest Child Health Centre operates on an appointment system and the service is free. The Centre closest to your home is listed in the White Pages under “Health, Children’s Community Health Services”. There is a 24 hour Telephone Information and Advisory Service able to answer queries on parenting issues at any time, phone (number).

Thank you once again for your offer of support for this important research.

Yours faithfully

FIELD

Community Paediatrician
Community Child Health Service
Appendix D

FAMILY CARE PROJECT

PARENT INTERVIEW AT 6 WEEKS

Questionnaire 2

Participants Code: ____________________________

Child's DOB: ____________________________ Date of Interview ____________________________

Child's Birth Length ________ Present Length ________

Child's Birth Weight ________ Present Weight ________

Child's Birth Head Circumference (HC) ________ Present HC ________

Tick one box only unless otherwise indicated. (Numbers beside the boxes are for office use only). A space has been provided at the end of the questionnaire for any comments you may wish to make on any items or any other issue you wish to raise.

FEEDING:
Q1 Before your baby was born, did you plan to breastfeed your baby?

☐ (1) Yes ☐ (2) No ☐ (3) I had not decided before the birth

Q2 When you left hospital after the birth of your baby, was your baby being fed breast milk?

☐ (1) Yes ☐ (2) No

Q3 How is your baby being fed this week?

☐ (1) Fully breast fed (Breast milk at all feeds)________________ Go to Q5

☐ (2) Fully formula fed (eg. Nan, S26)

☐ (3) Given both breast milk and formula

☐ (4) Other (Please Specify): ________________________________
Q4 (a) If you have weaned your baby from breast milk, why did you choose to wean?

(Tick as many boxes as you need to here)

☐ (1) not applicable (baby bottle fed from birth) Go to Q5
☐ (2) concern for baby's growth
☐ (3) didn't like it
☐ (4) didn't feel confident enough to continue
☐ (5) sore nipples
☐ (6) mastitis
☐ (7) return to work
☐ (8) advice from a professional health care worker (please specify) .................
☐ (9) advice from a friend or relative
☐ (10) Other (please explain) ..................................................

(b) How do you feel about the decision to wean at present?

Please place a cross (X) in the line provided which best describes how you feel about the decision today

Confident 1 2 3 4 5 Not confident

Relieved 1 2 3 4 5 Worried

Not guilty at all 1 2 3 4 5 Guilty
Q5 Did anyone/does anyone help you with feeding problems?
(Tick as many boxes as you need to here)
- (1) Partner
- (2) Other family (please specify)
- (3) Friends
- (4) Nursing Mothers Association
- (5) Visiting nurse
- (6) Nurse at the local clinic
- (7) Nurse at the local Chemist
- (8) My Doctor
- (9) Other (please specify)
- (10) No-one

Q6 At what age do you plan to give your baby anything other than milk, such as cereal?

Sleeping:

Q7 Over the past seven days, where has your baby usually slept at night?
- (1) In his/her own room
- (2) In a cot in my bedroom
- (3) With me in my bed most nights
- (4) Other (please specify)

Q8 I usually put my baby down to sleep
- (1) On his/her back
- (2) On his/her side
- (3) On his/her front
Q9  How do you think the risk of cot death can be reduced? Please write down three ways that you think parents can help.

1. ........................................................................................................

2. ........................................................................................................

3. ........................................................................................................

Q10  Does anyone at your home smoke?

Baby's Mother  □ (1) Yes  □ (2) No

Baby's Father  □ (1) Yes  □ (2) No

Anyone else living at home  □ (1) Yes  □ (2) No

Q11  Are there any house rules regarding smoking in your home?

□ (1) Yes  □ (2) No

(Tick as many boxes as you need to here)

□ (1) no smoking in the house

□ (2) smoking in some rooms only

□ (3) smoking inside only when visitors/friends come over

□ (4) no smoking when holding the baby

□ (5) other (please specify) ...........................................................................
Illnesses:

Q12 Since birth, has your baby had any

Falls  □ (1) Yes  □ (2) No
Burns  □ (1) Yes  □ (2) No
Cuts   □ (1) Yes  □ (2) No
Scratches □ (1) Yes □ (2) No
Bruises □ (1) Yes □ (2) No
Other Injury □ (1) Yes □ (2) No

(Please Specify) ...........................................................

If you have ticked yes for any of the above, please explain what happened at the time ...........................................................

Q13 Since the baby's birth, how many times have you taken your baby to

(i) a doctor  
- For emergency or illness events  
- For other routine visits  

(ii) the hospital 
- For emergency or illness events  
- For other routine visits  

Q14 Has your baby been admitted into hospital since birth?

□ (1) Yes  □ (2) No  If no, go to Q16

Please explain why your baby was admitted to hospital ...........................................................

Q15 How long did your baby stay in hospital? ............................................................

Q16 How many times have you been to the doctor with health concerns about yourself since your baby was born? ............................................................
Q17 Please indicate the response that best describes how helpful the services have been to your family since the birth of your baby.

<table>
<thead>
<tr>
<th>Items</th>
<th>Not at all</th>
<th>Sometimes</th>
<th>Generally</th>
<th>Very</th>
<th>Extremely</th>
<th>Not applicable</th>
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<tr>
<td>1. Young Parents Program</td>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2. Aboriginal Health Service</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3. Local doctor</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4. Local Medical Centre</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5. Local Chemist</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6. Social Worker</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>7. Child Health Clinic</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>8. Child Health Nurse</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9. Nursing Mother's Association</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>10. Other therapists (eg. chiropractor, naturopath, homeopath)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>11. Other (please specify)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Immunisation

Q18 Has your baby had any immunisations yet?

☐ (1) Yes ☐ (2) No ☐ (3) Not sure

If yes, please indicate which one he/she has had ...........................................

.................................................................

Q19 When do you plan to commence your baby's immunisation schedule

.................................................................

Child Health Services:

Q20 How often do you visit a Child Health clinic / baby clinic?

☐ (1) Never ☐ (3) Fortnightly
☐ (2) Weekly ☐ (4) Monthly

Q21 Since the baby's birth, how often has a Community Child Health Nurse visited you at home?

☐ (1) Never ☐ (3) Weekly
☐ (2) Once only ☐ (4) Fortnightly

Q22 Has the Child Health Nurse advised you to contact any other agencies or health services for assistance?

☐ (1) Yes ☐ (2) No ☐ (3) Not Applicable

If yes, which agencies / health services: .........................................................

.................................................................

If yes, have you had contact with the service yet?

☐ (1) Yes ☐ (2) No ☐ (3) Not Applicable

You may wish to describe the service received ..............................................
Q23  How strongly do you AGREE or DISAGREE with each of the following statements? (CIRCLE ONE NUMBER ON EACH LINE)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) The Child Health Nurse/s are good about explaining aspects of child care</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(b) The care I have been receiving from the Child Health Nurse/s is just about perfect</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(c) The Child Health Nurse/s act too business like and impersonal toward me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(d) The Child Health Nurse/s treat me in a very friendly and courteous manner</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(e) The Child Health Nurse/s sometimes hurry too much when I see them</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(f) Child Health Nurse/s sometimes ignore what I tell them</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(g) The Child Health Nurse/s usually spend plenty of time with me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(h) I find it hard to get an appointment with the Child Health Nurse/s right away</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(i) I am dissatisfied with some things about the care I receive from the Child Health Nurse/s</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(j) I am able to get the Child Health Nurse/s assistance whenever I need it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Thank you for completing the questionnaire. If you would like to comment further on any of your responses or raise other issues, please do so in the space below.

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
Appendix E

Participant’s Code: ___________________________ Date: ___________________________

Child’s Present Length ___________________________

Child’s Present Weight ___________________________

Child’s Present Head Circumference (HC) ____________

Tick one box only unless otherwise indicated. (Numbers beside the boxes are for office use only). A space has been provided at the end of the questionnaire for any comments you may wish to make on any items or any other issues you wish to raise.

Q1 Are you still breast feeding?
   □ (1) Yes □ (2) No □ (3) Not applicable

Q2 We would like to know how you feel about your baby’s eating/feeding behaviour. 
   On a scale of 0-10, with 0 being no problem at all and 10 being a major problem, put 
   a tick on the line which represents how much of a problem your child’s eating/feeding 
   is to you.

   0 1 2 3 4 5 6 7 8 9 10
   no problem major problem

Q3 We would like to know how you feel about your baby’s current sleep pattern.
   On a scale of 0-10, with 0 being no problem at all and 10 being a major disturbing 
   problem, put a tick on the line which represents how much of a problem your child’s 
   sleeping is to you.

   0 1 2 3 4 5 6 7 8 9 10
   no problem major problem
Illnesses

Q4  Since I saw you last, has any child in your household had any of these injuries at your home and required medical assistance:

<table>
<thead>
<tr>
<th>Injury</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burns or scalds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuts and lacerations / bruising / crushing / sprain or twist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidental poisoning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fractures, broken bones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of consciousness, concussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Near drownings, submersions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None of these</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you have ticked Yes for any of the above, please explain what happened at the time

...................................................................................................................................................
...................................................................................................................................................
...................................................................................................................................................

Q5  Since the last time I saw you at around seven months, how many times have you taken your baby to:

(i) a doctor  
- For accident events  
- For emergency or illness events  
- For other routine visits

(ii) the hospital  
- For accident events  
- For emergency or illness events  
- For other routine visits
Q6  How many times have you been to the doctor with health concerns about yourself in the past month?
........................................................................................................................................................................

Q7  Has your baby been admitted into hospital since the last time I saw you at around seven months?
☐ (1) Yes  ☐ (2) No_______ If no, go to Q9

Please explain why your baby was admitted to hospital ..............................................................................................................................
................................................................................................................................................................................................
................................................................................................................................................................................................
................................................................................................................................................................................................
................................................................................................................................................................................................

Q8  How long did your baby stay in hospital? ........................................................................................................................................

Q9  Do you give your baby any medicine?
☐ (1) Yes  ☐ (2) No

Please specify which medicine, and what it is used for ..............................................................................................................................
................................................................................................................................................................................................
................................................................................................................................................................................................
................................................................................................................................................................................................
................................................................................................................................................................................................

Q10  Who advised you to give the medicine?
☐ (1) No-one  ☐ (4) Relatives
☐ (2) Doctor  ☐ (5) Child Health Nurse
☐ (3) Chemist  ☐ (6) Other...............................................................................................................................................................
Immunisation:

Q11 Has your baby been fully immunised for these diseases yet (up until 12 months)?

<table>
<thead>
<tr>
<th>Triple Antigen</th>
<th>(i) whooping cough</th>
<th>(2) No</th>
<th>(3) Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) diphtheria</td>
<td>(2) No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1) Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii) tetanus</td>
<td>(2) No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1) Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iv) poliomyelitis</td>
<td>(2) No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1) Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(v) Hib</td>
<td>(2) No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1) Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q12 Has your baby been fully immunised for these diseases yet (at around 12 months)?

Measles, Mumps, Rubella (MMR)

<table>
<thead>
<tr>
<th>(1) Yes</th>
<th>(2) No</th>
<th>(3) Not sure</th>
</tr>
</thead>
</table>

Q13 If your baby is not up to date with immunisations, is it because:

- (1) you were advised not to by a health care professional
- (2) you were advised not to by a relative or friend
- (3) your baby has been sick
- (4) personal choice
- (5) other, please specify

Safety

Q14 How often is your child watched by an adult when swimming in a pool?

- (1) At all times
- (2) On some occasions
- (3) Child never uses pool
- (4) On most occasions
- (5) Never
Q15  All children have to be taught at some time not to touch things which are poisonous if swallowed. At what age do you think it is no longer necessary to lock away poisons because children understand the danger?  

Q16a What is the first thing you would do if your child or a visiting child had swallowed a poison?  

Q16b Where would you look to find the Poisons Information telephone number in an emergency?  

Q17  Because you have young children in your household, we would value your opinion about the age at which children can do certain things. At which of the age groups below can a child......

a)  be left on a bench or table without an adult being there?

☐  (1) 0 - 6 months
☐  (2) 7 - 12 months
☐  (3) 13 - 18 months
☐  (4) 19 - 24 months
☐  (5) between 2 - 3 years
☐  (6) between 4 - 5 years
☐  (7) over 5 years

Family CARE Project - Questionnaire 5 (12 months)  CONFIDENTIAL
b) safely manage stairs so that it is not necessary to block them off?

☐ (1) 0 - 6 months
☐ (2) 7 - 12 months
☐ (3) 13 - 18 months
☐ (4) 19 - 24 months
☐ (5) between 2 - 3 years
☐ (6) between 4 - 5 years
☐ (7) over 5 years

c) know the danger of putting a plastic bag over the head?

☐ (1) 0 - 6 months
☐ (2) 7 - 12 months
☐ (3) 13 - 18 months
☐ (4) 19 - 24 months
☐ (5) between 2 - 3 years
☐ (6) between 4 - 5 years
☐ (7) over 5 years

d) play in the kitchen when things are cooking on the stove without saucepan handles having to be turned to the back of the stove?

☐ (1) 0 - 6 months
☐ (2) 7 - 12 months
☐ (3) 13 - 18 months
☐ (4) 19 - 24 months
☐ (5) between 2 - 3 years
☐ (6) between 4 - 5 years
☐ (7) over 5 years
e) have a bath without an adult being in the bathroom?

☐ (1) 0 - 6 months
☐ (2) 7 - 12 months
☐ (3) 13 - 18 months
☐ (4) 19 - 24 months
☐ (5) between 2 - 3 years
☐ (6) between 4 - 5 years
☐ (7) over 5 years

Q18 In the last 12 months, have you made any changes to your house or yard area, the main purpose of which was to increase the safety of your home?

☐ (1) Yes ☐ (2) No

If yes, please specify........................................................................................................................................
.................................................................................................................................................................
.................................................................................................................................................................
.................................................................................................................................................................
.................................................................................................................................................................

Q19 On the scale below, show whether you agree, strongly agree, disagree or strongly disagree with the statement.

a) Most accidents in the home could be prevented.

☐ (1) Strongly Agree
☐ (2) Agree
☐ (3) Disagree
☐ (4) Strongly Disagree
☐ (5) No Opinion
b) Home safety is really just a matter of common sense.

☐ (1) Strongly Agree
☐ (2) Agree
☐ (3) Disagree
☐ (4) Strongly Disagree
☐ (5) No Opinion

c) There is no need for people to learn anything more about home safety.

☐ (1) Strongly Agree
☐ (2) Agree
☐ (3) Disagree
☐ (4) Strongly Disagree
☐ (5) No Opinion

d) Most people wouldn't know where to find information about home safety.

☐ (1) Strongly Agree
☐ (2) Agree
☐ (3) Disagree
☐ (4) Strongly Disagree
☐ (5) No Opinion

Child Health Services:

Q20 During the past two months, how often have you visited a Child Health Clinic / baby clinic?

☐ (1) Never ☐ (2) Weekly ☐ (3) Fortnightly ☐ (4) Monthly
Q21  During the past two months, how often has a Child Health Nurse visited you in your home?

☐ (1) Never  ☐ (2) Weekly  ☐ (3) Fortnightly  ☐ (4) Monthly

**Family Issues**

Q22  Are you in a relationship in which you have been physically hurt or threatened by your partner?

☐ (1) Yes  ☐ (2) No  ☐ (3) Not applicable

Q23  How often are you hit, slapped or otherwise physically hurt in fights at home?

☐ (1) Always  ☐ (2) Rarely  ☐ (3) Sometimes  ☐ (4) Never

Q24  Do you ever feel afraid that your partner may harm your baby during fights at home?

☐ (1) Yes  ☐ (2) No  ☐ (3) Not applicable

Q25  If there have been difficulties in your relationship since your baby has been born, have you received any assistance in resolving these?

☐ (1) Yes  ☐ (2) No  ☐ (3) Not applicable

If yes, who has provided this assistance?  .................................................................................................................................

.................................................................................................................................................................................................

Please indicate the response that best describes how helpful this assistance has been to you since the birth of your baby.

<table>
<thead>
<tr>
<th>Not at all helpful</th>
<th>Sometimes helpful</th>
<th>Generally helpful</th>
<th>Very helpful</th>
<th>Extremely helpful</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Q26 How often have you had more than 2 standard alcoholic drinks (such as a 10oz beer, glass of wine, spirit drink) in the past 7 days?

☐ (1) 0 times ☐ (5) 4 days
☐ (2) 1 day ☐ (6) 5 days
☐ (3) 2 days ☐ (7) 6 days
☐ (4) 3 days ☐ (8) 7 days

Q27 How often has your partner had more than 2 standard alcoholic drinks (such as a 10oz beer, glass of wine, spirit drink) in the past 7 days?

☐ (1) 0 times ☐ (5) 4 days
☐ (2) 1 day ☐ (6) 5 days
☐ (3) 2 days ☐ (7) 6 days
☐ (4) 3 days ☐ (8) 7 days
☐ (9) not applicable

Q28 Has any assistance for you or your partner’s drug or alcohol use been offered since the birth of your baby?

☐ (1) Yes ☐ (2) No ☐ (3) Not applicable

If so, by who?.............................................................................................................................................

Please indicate the response that best describes how helpful this assistance has been to you since the birth of your baby.

<table>
<thead>
<tr>
<th>Not at all helpful</th>
<th>Sometimes helpful</th>
<th>Generally helpful</th>
<th>Very helpful</th>
<th>Extremely helpful</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Thank you for completing the questionnaire. If you would like to comment further on any of your responses or raise other issues, please do so in the space below.
### Appendix F
**MAPPING YOUR BABY'S SLEEP–WAKE CYCLES**

<table>
<thead>
<tr>
<th>DEEP SLEEP</th>
<th>Time</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>motionless</td>
</tr>
<tr>
<td></td>
<td></td>
<td>deep, regular breathing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>can shut out noise</td>
</tr>
<tr>
<td>LIGHT SLEEP</td>
<td></td>
<td>sucking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>may startle to noise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>breathing irregular/shallow</td>
</tr>
<tr>
<td>INTERMEDIATE STATE</td>
<td></td>
<td>may rouse/move</td>
</tr>
<tr>
<td></td>
<td></td>
<td>eyes open/shut</td>
</tr>
<tr>
<td></td>
<td></td>
<td>unsettled sleepy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>may cry out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>shallow/irregular breathing</td>
</tr>
<tr>
<td>WIDE AWAKE/ALERT</td>
<td></td>
<td>bright face</td>
</tr>
<tr>
<td></td>
<td></td>
<td>receptive/responsive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>deep breathing/regular</td>
</tr>
<tr>
<td></td>
<td></td>
<td>may make noises</td>
</tr>
<tr>
<td>FUSSY/ALERT</td>
<td></td>
<td>movements jerky</td>
</tr>
<tr>
<td></td>
<td></td>
<td>breathing irregular</td>
</tr>
<tr>
<td></td>
<td></td>
<td>fussing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>whimper/cranky</td>
</tr>
<tr>
<td>CRYING</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6 - 8 weeks  GROWTH PROFILE

Screen
- femoral pulses
- testes
- head circumference (record percentile)
- length (record percentile)
- weight (record percentile)
- abduction test of hips
- vision profile / inspection
- developmental profile
- hearing profile

Approx. 6 - 8 weeks  DEVELOPMENTAL PROFILE

- Follows a dangling object at 25cm through 90°
- smiles in response
- interested in people and movement
- eyes both look the same
- reflex grasp, clenches and unclenches
- when lying face down, lift head
- watches face and follows with his/her eyes
- turns towards light
- looks into others' eyes

About 6 - 8 weeks  HEARING PROFILE

Does your child:

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>blink, startle or cry when there is a sudden loud noise?</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>stop crying for a moment when you talk?</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>seem aware of your voice?</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>stop sucking momentarily or look up from sucking when there is a sudden noise?</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>wake or stir to loud sounds?</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>The softest sound my child can hear is</td>
<td>________</td>
<td>( )</td>
</tr>
<tr>
<td>Do you have any concern about your child's hearing?</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>
**About 2 - 4 months**

**Does your child:**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- blink, startle or cry when there is a sudden loud noise?
- stop crying for a moment when you talk?
- show interest in familiar voices or sounds?
- turn the eyes or begin to turn the head to a sound?
- wake or stir to loud sounds?
- The softest sound my child can hear is ___________
- Do you have any concern about your child’s hearing? 

**DEVELOPMENTAL PROFILE**

**4 months** (or at nearest visit)

- follows objects with eyes, squint abnormal
- reaches out for toys, grasps firmly
- reaches out to be picked up
- lifts head from pillow
- sits on floor, hands forward for support
- Chews
- transfers cube from one hand to another
- rolls over
- beginning to imitate (eg: cough)
- when lying face down, pushes up with his/her arms

**GROWTH PROFILE**

- head circumference (record percentile)
- length (record percentile)
- weight (record percentile)
- developmental profile
- hearing profile
- vision profile
HEARING PROFILE

About 6 months

Does your child:

- turn immediately to your voice across the room? 
  Yes ( ) No ( ) Not sure ( )
- turn to quiet noises made on each side if he/she is not occupied with other things? 
  Yes ( ) No ( ) Not sure ( )
- stop or start movements when a new sound begins? 
  Yes ( ) No ( ) Not sure ( )
- make different babbling sounds? 
  Yes ( ) No ( ) Not sure ( )
- seem to enjoy musical toys? 
  Yes ( ) No ( ) Not sure ( )
- The softest sound my child can hear is ________________
- Do you have any concern about your child’s hearing? 
  Yes ( ) No ( ) Not sure ( )

DEVELOPMENT PROFILE

Approx 6 months

- follows object with eyes, squint abnormal
- reaches out for toys, grasps firmly
- reaches out to be picked up
- lifts head from pillow
- sits on floor, hands forward for support
- chews
- transfers cube from one hand to another
- rolls over
- beginning to imitate (eg: cough)
- when lying face down, pushes up with his/her arms

GROWTH PROFILE

Screen

- head circumference (record percentile)
- length (record percentile)
- weight (record percentile)
- abduction test of hips
- eye function - corneal light reflex
- developmental profile
- hearing profile
- testes
Name: ___________________________ Date of birth: ____________________

**About 9 Months**

<table>
<thead>
<tr>
<th>Signature: ____________________</th>
<th>Date: ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your child:</td>
<td>Yes</td>
</tr>
<tr>
<td>- respond to own name, or &quot;baby&quot;?</td>
<td>( )</td>
</tr>
<tr>
<td>- look around for source of new sounds, even quiet ones?</td>
<td>( )</td>
</tr>
<tr>
<td>- understand &quot;no&quot; and &quot;ta-ta&quot;?</td>
<td>( )</td>
</tr>
<tr>
<td>- babble loudly and tunefully?</td>
<td>( )</td>
</tr>
<tr>
<td>- imitate if you make his/her own sounds?</td>
<td>( )</td>
</tr>
<tr>
<td>The softest sound my child can hear is __________________________.</td>
<td></td>
</tr>
<tr>
<td>Do you have any concern about your child's hearing?</td>
<td>( )</td>
</tr>
</tbody>
</table>

**About 12 Months**

<table>
<thead>
<tr>
<th>Signature: ____________________</th>
<th>Date: ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your child:</td>
<td>Yes</td>
</tr>
<tr>
<td>- look for source of interesting sounds outside his/her peripheral vision?</td>
<td>( )</td>
</tr>
<tr>
<td>- respond to simple commands and names of familiar objects and people?</td>
<td>( )</td>
</tr>
<tr>
<td>- look at or point to familiar objects or people when asked to?</td>
<td>( )</td>
</tr>
<tr>
<td>- imitate simple words and sounds?</td>
<td>( )</td>
</tr>
<tr>
<td>- make one-word utterances?</td>
<td>( )</td>
</tr>
<tr>
<td>The softest sound my child can hear is __________________________.</td>
<td></td>
</tr>
<tr>
<td>Do you have any concern about your child's hearing?</td>
<td>( )</td>
</tr>
</tbody>
</table>

**About 18 Months**

<table>
<thead>
<tr>
<th>Signature: ____________________</th>
<th>Date: ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your child:</td>
<td>Yes</td>
</tr>
<tr>
<td>- quickly locate a quiet and interesting sound outside his/her peripheral vision?</td>
<td>( )</td>
</tr>
<tr>
<td>- quickly respond to his/her own name?</td>
<td>( )</td>
</tr>
<tr>
<td>- respond to commands (e.g. 'come here')?</td>
<td>( )</td>
</tr>
<tr>
<td>- identify parts of his/her body (e.g. nose, mouth, ear, eye, hand or foot)?</td>
<td>( )</td>
</tr>
<tr>
<td>- say one to two word utterances meaningfully?</td>
<td>( )</td>
</tr>
<tr>
<td>The softest sound my child can hear is __________________________.</td>
<td></td>
</tr>
<tr>
<td>Do you have any concern about your child's hearing?</td>
<td>( )</td>
</tr>
</tbody>
</table>

**About 2 Years**

<table>
<thead>
<tr>
<th>Signature: ____________________</th>
<th>Date: ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your child:</td>
<td>Yes</td>
</tr>
<tr>
<td>- quickly locate a quiet and interesting sound outside his/her peripheral vision?</td>
<td>( )</td>
</tr>
<tr>
<td>- respond to commands (e.g. 'show me your shoes')?</td>
<td>( )</td>
</tr>
<tr>
<td>- follow two linked requests (e.g. 'get the bell and put it on the table')</td>
<td>( )</td>
</tr>
<tr>
<td>- repeat simple phrases</td>
<td>( )</td>
</tr>
<tr>
<td>- put two to three words together meaningfully (e.g. 'milk all gone')?</td>
<td>( )</td>
</tr>
<tr>
<td>The softest sound my child can hear is __________________________.</td>
<td></td>
</tr>
<tr>
<td>Do you have any concern about your child's hearing?</td>
<td>( )</td>
</tr>
</tbody>
</table>