

# **Influences of Maternal Employment and Early Childhood Education on Young Children's Cognitive and Behavioural Outcomes**

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## Introduction

*This paper provides an informed basis for potential policy work on balancing parenting and paid work as part of the Work-Life Balance Project. It is a starting point for debate, rather than a conclusive end point.*

*The paper provides an overview of the conclusions from key New Zealand and international research about the impacts of maternal employment and early childhood education on children's outcomes.*

Society and the economy benefit from people's paid work, as well as from the work of mothers and fathers as parents. How parents choose to balance their paid work and family responsibilities depends primarily on their personal circumstances. These decisions cannot be determined centrally, but policies can influence and inform people's decision-making and allow them wider choice, since it is in society's wider interests to maximise the positive outcomes from parental employment and early childhood development.

Considerable debate has taken place in New Zealand and overseas about the benefits and costs associated with mothers of young children engaging in paid employment. This debate highlights particular social expectations for women (including women's expectations of themselves) that may not be reconcilable with each other (Sceats, 2003: 13):

- women are expected to have children
- women are expected to be 'good' mothers and be there for their children, especially when their children are very young
- women are expected to compete in, and contribute to, the workforce using the skills and knowledge they have acquired through education and work experience.

The two sides of the argument are that on one hand mothers should be at home with young children to maximise their well-being and development; on the other hand, mothers benefit from participating in paid work (and as a consequence so do children, families and economies) (for example, Horwood and Fergusson, 1999: 1013; Byrne, 2002: 12).

Byrne (2002: 12–3) suggests governments over the last 15 years have supported women to stay at home (for example, by removing social supports and increasing people's reliance on family care instead of institutional care). However, others consider government policies have been designed to encourage or force women to engage in paid work and place their children in early childhood education, for example, minimal paid parental leave (by Organisation for Economic Cooperation and Development (OECD) standards), individual taxation instead of 'family taxation', increases in early childhood education funding and lack of financial support for women's unpaid work. The consultation for the *Action Plan for New Zealand Women* and the response of the Parents' Centre to the 2004 Budget both represented this point of view (Ministry of Women's Affairs, 2004; Parents' Centre, 2004).

Children's early life experiences shape the development of their cognitive, social and emotional capacities that influence children at school and in later life. Significant personal, social and economic benefits are to be gained in maximising children's positive developmental outcomes and minimising negative outcomes. Therefore, it is important government policies that impact on child development are informed by the latest research.

Recent studies about the effects on children of parental (usually maternal) employment and early childhood education have led to differing conclusions; some studies have found positive effects, others negative. This paper draws out overall conclusions from these two areas of research.

A difficulty with this work is that most research has focused on mothers rather than fathers. A major United States study included fathers with 'other caregivers' rather than with mothers as 'parental' carers (National Institute of Child Health and Human Development, 2003). While the research about mothers may apply to fathers when they are in the primary caregiver role, little research confirms this.<sup>1</sup> Therefore, this paper does not use the terms 'parents' or 'parental' unless the particular research also does so.

While research can draw broad conclusions, its applicability to individuals' experiences and lives will vary depending on individual and family characteristics and life situations. The balance between work and life is different for each person and different at different times for each person. What is important is the extent to which people have choices and control over their circumstances. People will always have to make trade-offs when managing their lives, for example, between the potential positive effects on maternal mental health of returning to work and the potential negative effects for the child of early, extensive non-maternal care. It is important people are as well-informed as possible when making these decisions.

### ***Approach taken in this paper***

The paper is not a comprehensive review of all the literature on maternal employment and early childhood education. Due to time constraints this paper relies partially on previous literature reviews in this area rather than the outcome of systematic searches of databases and primary sources. The paper's conclusions must be read in that light.

Comprehensive coverage of the international literature from a New Zealand perspective is in two reports to the Ministry of Education (Nechyba, McEwan and Older-Aguilar, 1999; Smith et al., 2000).

Although this review focuses on the impacts of maternal employment and early childhood education, these factors are only two aspects of children's and families' lives. Factors that influence children's and parents' well-being are numerous and interconnected. It has been suggested the tendency of research in this area to focus on 'good' versus 'bad' outcomes is simplistic and does not improve our

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<sup>1</sup> Psychologists generally conclude that a parent's gender is less important than their parenting style and relationship with the child (for example, O'Brien and Shemilt, 2003: 20).

understanding of the complexity of people's lives and the interplay of influences (for example, Gottfried et al., 1999: 33).

While this paper does review the research findings of positive or negative outcomes of maternal employment and associated non-maternal education and care, it also attempts to place these in a broader context of the related factors influencing people's lives and to identify the mix of factors that can lead to the most beneficial outcomes for families.

Since this review is focused specifically on maternal employment and early childhood education impacts on children, it must be remembered that children's development is influenced by the various contexts of their lives and by the secondary influences on those contexts. This ecological perspective reflects the widely supported philosophy that underpins New Zealand early childhood education as expressed in *Te Whāriki*, the early childhood curriculum, (for example, Nuttall, 2003: 8–9) and used by Smith and colleagues in their review of early childhood education literature (Smith et al., 2000).

The key contexts of a child's life include the:

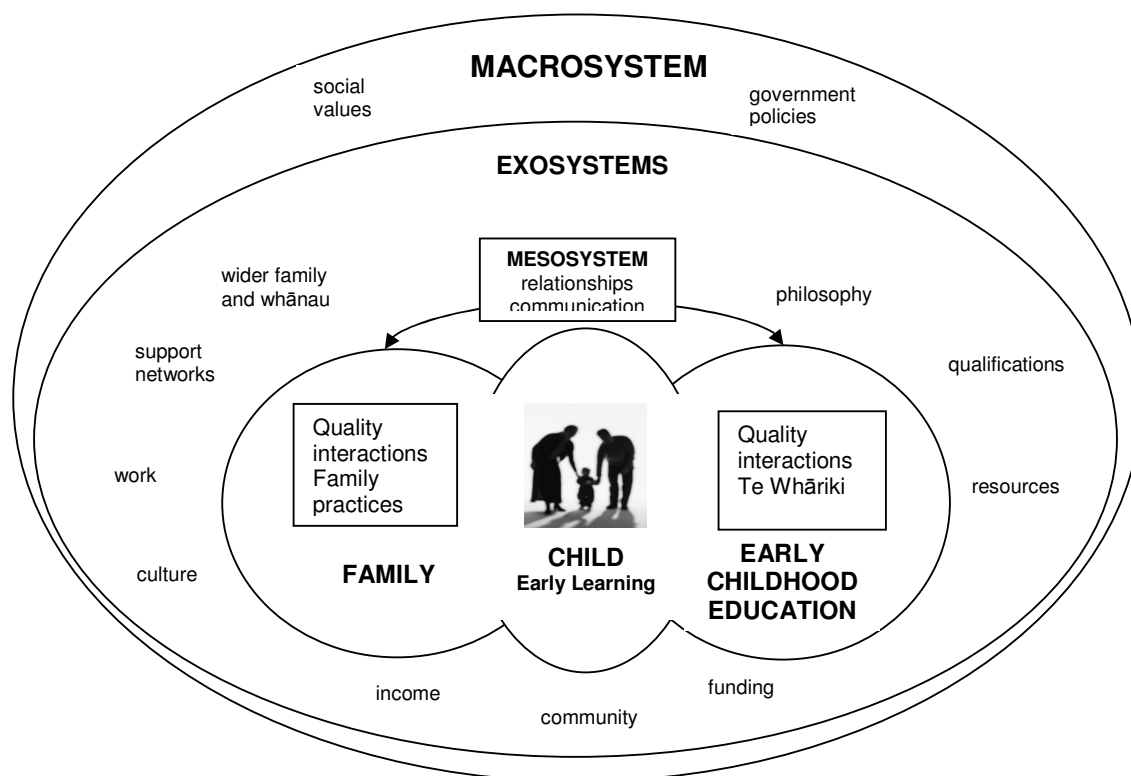
- two microsystems of family and early childhood education services
- wider exosystems that influence the microsystems, such as parents' work and wider family and whānau or funding and staff training in early childhood education
- overarching macrosystem, including government policies and social values.

Figure 1 (next page) sets out the contexts of a child's life using an ecological framework.

One issue is the relationship between the microsystems of home and early childhood education and their independent and/or interconnected influences on children's development. While the two microsystems are separate and distinct, they are also often interrelated.

This paper focuses on children's development in the home and early childhood education contexts of their lives, but notes that children participate in other contexts, including in the neighbourhood, on the marae and in wider cultural and social settings. While this paper overviews some wider influences, it is not a comprehensive study of the effect of different contexts on children's lives. The paper's conclusions about maternal employment and early childhood education must be read with that in mind.

**Figure 1: Contexts of a child's life in an ecological framework**



Source: Based on models from Ministry of Education (1996) and Smith et al. (2000).

### ***Methodological issues***

Different studies about child development and the impacts of maternal employment and early childhood education vary in their methodologies, making it difficult to compare results across studies. Methodological problems include (Currie, 2003; Newcombe, 2003; Smith et al., 2000; Horwood and Fergusson, 1999):

- difficulties controlling adequately for external factors such as maternal education or quality of early childhood education
- over-controlling for external factors, thereby separating the individual from their everyday life experiences and context
- selection bias
- limited outcomes measures of child development (for example, standardised tests) and the timing of assessments (usually only of young children)
- mono-cultural perspectives
- the variability of maternal work participation (for example, the timing of re-entry and hours of work).

More recent studies have attempted to control thoroughly for external factors and address selection bias. However, it is impossible to develop a study that covers and controls all factors. While studies will inevitably differ in their methodologies, if the results can be replicated in a wide range of well-designed studies, the general

direction of the findings will be reasonably compelling. Well-designed studies attempt to deal with sample selection problems. Studies that use several methodologies and/or data sets are also more informative than those that do not (Currie, 2003: 27).

In addition to methodological problems, applying international research to the New Zealand socio-cultural context is problematic. Research findings relate to the socio-cultural context in which the study was undertaken and while they can suggest possibilities for other contexts, their applicability needs to be investigated and demonstrated.

This paper identifies some limitations of particular pieces of research and considers the applicability of international research to the New Zealand context by relating it to New Zealand research findings and data.

## New Zealand Situation

*In New Zealand:*

- 47 percent of mothers with a child under five were employed in 2001
- 63 percent of young children were enrolled in early childhood education in July 2002
- 27 percent of children in non-maternal care were in informal care and 87 percent were in formal care (some children were in multiple services).

*The biggest increase in enrolments in formal early childhood education from 1991 to 2002 was for children aged one (growth of 87 percent). Growth in enrolments over the same period was also high for children aged under one (54 percent) and aged two (78 percent).*

*Children from low socio-economic backgrounds are less likely to participate in early childhood education.*

*Cost has been the major barrier to parents accessing formal quality early childhood education.*

*The early childhood education strategic plan aims to increase the quality of early childhood education. The associated funding changes will make early childhood education more affordable from 2007 for parents of children aged three and four.*

Women with young children are returning to the paid workforce in greater numbers and earlier than in previous decades (Sceats, 2003: 5–7). New Zealand women with preschool children return to work for many reasons, including (Sceats, 2003):

- financial need
- a fear their skills will become outdated
- a fear their re-entry into paid work will become progressively more difficult
- to enhance or maintain their self-esteem
- for intellectual stimulation.

In the government's Work-Life Balance consultation people raised balancing work and parenting responsibilities, particularly for women, as a key issue (Department of Labour, 2004).

The proportion of women in the New Zealand labour market increased from nearly 42 percent in 1986 to 47 percent in 2001. In 2001, the relative proportions of women and men in full-time employment were similar (46.6 percent for women and 53.3 percent for men), but in part-time employment women constituted 72.1 percent of all workers (Ministry of Social Development, 2004b).

In almost all age groups women are more likely than men to be employed part time. In the prime working age groups, this difference mainly reflects differences between men's and women's childrearing responsibilities. It is interesting to note that this

difference persists into the group aged 60 and over. No information is available on the reasons for this pattern continuing after the childrearing years. It is not known whether women in this older age group would prefer to increase their hours or continue to work part time.

**Table 1: Labour force and family type for families with a child aged under five, 1986–2001**

Family type	Parents' labour force status	Year			
		1986 (%)	1991 (%)	1996 (%)	2001 (%)
Two parent	Father in paid work, mother not in paid work	49.2	35.6	28.5	28.0
Two parent	Mother in paid work, father not in paid work	0.8	2.1	2.4	2.5
Two parent	Both parents in paid work	30.2	28.4	35.8	36.3
Two parent	Neither parent in paid work	3.2	9.8	7.6	6.3
One parent	Mother in paid work	2.1	2.8	5.3	7.1
One parent	Mother not in paid work	13.3	18.8	18.4	17.1
One parent	Father in paid work	0.6	1.0	0.9	1.6
One parent	Father not in paid work	0.6	1.5	1.1	1.2
<b>Total</b>		<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Number		173,208	192,555	197,718	189,513

As the table above demonstrates, mothers of young children are participating more in paid work, whether in one parent or two parent families. The traditional model of father as breadwinner has markedly declined since 1986.

The largest group of employed mothers usually works full time each week (41 percent work 30 hours or more each week, 34 percent work up to 19 hours each week and 17 percent work 20–29 hours each week). Little difference is apparent in the pattern of hours worked between sole and partnered employed mothers (Ministry of Social Development, 2004b).

About 63 percent of young children were enrolled in some form of early childhood education in July 2002 (Ministry of Education, 2004). The 1998 New Zealand Childcare Survey showed that of the children who used early childhood education 46 percent used it for no more than ten hours each week; 29 percent used it 11–20 hours each week; 19 percent used it 21–40 hours each week; and 6 percent used it more than 40 hours each week (Department of Labour and NACEW, 1998).

Children from low socio-economic backgrounds have the lowest participation in early childhood education, and the early childhood education they do attend is generally low cost and low quality. For children aged under one, the most common care arrangement is with relatives (Smith et al., 2000: 18–21).

In 2002, 90 percent of all year one children at school had participated in early childhood education, although the levels by ethnicity were 84 percent for Māori children, 97 percent for Pākehā children and 77 percent for Pacific children (Ministry of Education, 2004). Of the 4,228 services, 3,488 were licensed. Education and care centres (crèches) had the highest proportion of enrolments. Ten years ago, sessional kindergartens had the highest proportion of enrolments (Ministry of Education, 2004). This change reflects changing demand as more mothers enter employment.

The increase in early childhood education enrolments from 1991 to 2002 was highest for children aged one (87 percent), but was also high for children aged under one (54 percent) and aged two (78 percent). The increase in the proportion of younger children attending early childhood education corresponds with the highest enrolment increases being in home-based care and early childhood education and care centres, which cater for these age groups (Ministry of Education, 2004).

The 1998 New Zealand Childcare Survey indicated that 27 percent of preschool children in non-parental care were in informal care; with 87 percent in formal early childhood education (some children used both). Informal care included baby-sitters and family (Department of Labour and NACEW, 1998). Sixteen percent of 2001 Census respondents said they engaged in looking after a child who did not live with them: 11 percent of men and 20 percent of women. Higher proportions of Māori were engaged in unpaid childcare outside the home compared with other population groups (Pink, 2001).

More recent research indicates that extended families may be the key providers of childcare, but this may not be parents' preferred option. People tend to see regular childcare as an imposition on the family and prefer using skilled, professional early childhood education (McPherson, 2004: 173).

Formal early childhood education in New Zealand can be expensive. The 1998 New Zealand Childcare Survey found that half the parents who had trouble accessing appropriate early childhood education found it too expensive. The childcare survey found the cost of early childhood education was the single biggest factor preventing mothers from participating in employment. Forty-seven percent of mothers who did not participate in employment because of problems accessing early childhood education did not do so because of the cost (Department of Labour and NACEW, 1998).

The proportion of women for whom cost was a barrier to employment was much higher for some groups of mothers than for others. Cost was more of a barrier for (Department of Labour and NACEW, 1998):

- Māori mothers (54 percent) than European mothers (45 percent)
- mothers from lower income families (58 percent) than mothers from other families (37 percent)
- sole parent mothers (61 percent) than partnered mothers (40 percent)
- mothers in paid work 1–19 hours each week (49 percent) than mothers in paid work for longer hours (37 percent)
- mothers with no formal educational qualifications (52 percent) than mothers with degrees or higher qualifications (37 percent).

The introduction of 20 hours free early childhood education in community-based services for children aged three and four from 2007 will assist significantly with addressing the cost barrier. Increases to childcare subsidies may also assist with costs for low income families (Ministry of Social Development (2004); see also Appendix A).

New Zealand has stronger links between low achievement and low socio-economic status (SES) than most other OECD countries (OECD, 2000). In New Zealand, families with low SES and low income backgrounds are less likely to have their children attending an early childhood education service (Smith et al., 2000: 3).

Family composition in New Zealand varies: 13 percent of families include three generations, two or more parenting couples, or have a non-related adult living with the family. This is much higher for Māori, Pacific and Asian families than Pākehā families, as shown in Table 2. Such arrangements have implications for the applicability of international research about informal care (by friends or family other than the mother).

**Table 2: Percentage of family households that include three-generation families, two or more parenting couples, or a non-related adult, by ethnicity of occupier, 1976 and 2001**

Year	European (%)	Māori (%)	Pacific (%)	Asian (%)	Total (%)
1976	11	26	40	12	<b>13</b>
2001	9	25	36	27	<b>13</b>

Māori, Pacific and Asian families are also more likely to have elderly relatives as well as children in the same household (see Table 3).

**Table 3: Percentage of family households with children aged under 16 and members aged 65 and over, by ethnicity of occupier, 1991 and 2001**

Year	European (%)	Māori (%)	Pacific (%)	Asian (%)	Other (%)	Total (%)
1991	0.7	2.6	5.7	3.5	1.5	<b>1.2</b>
2001	0.9	2.9	8.0	6.0	3.0	<b>1.6</b>

## ***Māori perspectives on child well-being and development***

*In New Zealand, the family and whānau are primary units for caregiving.*

*Research on the impact of maternal employment and early childhood education tends to be Eurocentric because it:*

- *focuses on the nuclear family with the mother as primary caregiver*
- *ignores the role of the family in passing on culture and language, and the potential disjunction in that regard between early childhood education and family contexts.*

Research on the impact of maternal employment and early childhood education focuses on the Eurocentric idea of a nuclear family with the mother as primary caregiver. Such an assumption means the research findings may not be applicable to communities where families and caregiving roles are significantly different. For example, in her story of being a working mother on Hoani Waititi marae, Ngareta Renata says her mother moved in with her and essentially became her son's principal caregiver while she worked full time. In addition, her husband's parents regularly took the child overnight. This extended family care sometimes happens in Pākehā families. Miranda Harcourt's mother lives with the family (in a semi-separate dwelling) to look after the children (Boyd, 2004).

While special care by grandparents sometimes occurs in Pākehā families, Māori communities often have a particular relationship between generations, with grandparents playing an active part in raising their mokopuna (grandchildren). This relationship is supported by different sorts of relationships between aunts and uncles and nephews and nieces (Metge, 1999: 41). In addition, Māori women's re-entry to paid work after the birth of a child has been found to be facilitated if they are living with their partner or spouse (this was not the case for other ethnic groups), which suggests a degree of informal support in these families (Pool and Hillcoat-Nallétamby, 1999: 21).

A further consideration for Māori mothers is their pattern of early childbearing, which means some mothers are having children before they finish their education. The importance of supporting non-maternal care so these mothers can return to their education is critical, both for the economic well-being of these mothers and families and the positive impact on children of more educated mothers.

Mason Durie points out that in New Zealand, both the family and whānau are primary units for caregiving (Durie, 1997: 3). This has implications for the application of international research about the 'family' to the New Zealand context, particularly in Māori (and probably Pacific) communities. For example, Durie suggests Māori sole parent families are increasingly becoming three-generational families to accommodate the demands of mokopuna and whānau support obligations (Durie, 1997: 6). This may make the nature of family care more like maternal care.

The concept of whānaungatanga (kinship relationship) is powerful in Māori communities. In Gisborne 95 percent of Māori had strong kinship ties, but even in the

urbanised Māori populations in Auckland, 80 percent of Māori had strong ties (McPherson 2003: 18). The customary practice of whāngai, whereby children are placed with relatives as primary caregivers, alters the nature of mother-child relationships. The Matua Whāngai initiative was designed to promote the care of Māori children within their whānau or iwi rather than their being fostered out to strangers.

The common, normative assumptions about families' responsibilities for children include (Ministry of Social Development, 2004b):

- reproduction, nurturing, rearing, socialising and protecting children
- maintaining and improving the well-being of family members by providing emotional and material support
- passing on culture, knowledge, values, attitudes, obligations and property from one generation to the next.

One of the problems with the narrow measurements of child outcomes in much of the research into non-maternal care is it tends to ignore the family's role in passing on culture and associated knowledge, values and attitudes and the potential disjunction between non-maternal care and family cultures. This is a particular issue for groups who are not of the dominant culture.

In Māori communities, family responsibilities for caring for children include emotional and spiritual development, the transmission of culture, te reo Māori (language) and development of identity (Durie, 1997: 9). The transmission of culture and development of identity must be considered when evaluating the impact of non-maternal care and early childhood education on children in New Zealand.

The kōhanga reo movement was established in 1981 in response to Māori concerns about the continuing survival of te reo Māori and tikanga Māori. It developed a distinctive model of Māori early childhood education that educates children as Māori, thereby providing an early childhood education option that supports the transmission of Māori language and culture. All the people involved in kōhanga reo or kura kaupapa Māori are considered to constitute a whānau which is responsible for nurturing the children in their care. Individual families combine with teachers, elders and other supporters to work collectively to revitalise Māori language and educate children (Waho, 1999: 44). A 1995 New Zealand study of families' experiences of early childhood education indicated that language maintenance in young children was a priority for Māori families (Smith et al., 2000: 90).

Arapera Royal Tangaere discusses the theory of Māori human development, whereby te ira tangata (the life spirit) is the essence of Māori knowledge (Tangaere, 1997: 47–48). Te ira tangata includes different dimensions, four of which are included in *Te Whāriki*, the New Zealand early childhood education curriculum:

- tinana (physical development)
- hinengaro (intellectual development)
- whatumanawa (emotional development)
- wairua (spiritual development).

The tuakana-teina relationship is one of the ways in which Māori is taught and learnt. It is similar to the concept of 'scaffolding' learning (originally from socio-cultural theorists such as Vygotsky) that underpins *Te Whāriki* (Tangaere, 1997: 50–51). The New Zealand early childhood education curriculum is bicultural, reflecting Māori values and aspirations equally with those of non-Māori. A child, growing up, is immersed in a world of cultural values. In the 'Māori world', these cultural values are the essence of tikanga Māori (Tangaere, 1997: 56). These values are included in *Te Whāriki* as:

- mana atua (personal well-being)
- mana tangata (self-esteem from contributing)
- mana whenua (sense of belonging and development of sovereignty)
- mana reo (communication)
- mana te ao tūroa (development of all aspects of the world and universe).

A further consideration is the nature of 'quality'. As Michael Lamb (1999) points out, 'quality' care must be defined in terms of the characteristics of particular societies and subgroups; that is, how quality is defined depends on the cultural points of view of the interested parties (Smith et al., 2000: 45).

While the New Zealand early childhood education curriculum supports early childhood education providers fostering Māori cultural identity, the extent to which this happens depends on providers' and communities' understanding, practices and cultural values. Durie concluded his lecture to *Te Ura Mai o te Motu* by highlighting the importance of protecting and celebrating Māori uniqueness alongside the uniqueness of others (Durie, 1999: 17).

*Te Hoe Nuku Roa Māori Profiles* was a longitudinal study of 665 Māori households undertaken by the Department of Māori Studies, Massey University and Statistics New Zealand. It used a Māori relevant framework to gauge personal and family development and identified that the more Māori were actively involved with whānau, the healthier they were, although the direction of causality was not clear (Stevenson et al., 2001: 5, 9).

Durie notes the importance of human capital development to the survival of Māori in the next millennium. Unless whānau are actively involved in helping members reach their full potential, progress will be limited (Durie, 1999: 14).

## Importance of Early Experiences to Brain Development

*Children's early development is influenced by the nature and quality of their experiences, particularly of nurturing and stimulation.*

*A child's early years are particularly significant for their brain development.*

It has been suggested children's early development, including brain development, is largely determined by the nature and quality of their experiences, particularly of nurturing and stimulation. This is thought to determine how inherited characteristics manifest themselves. The earliest experiences of life are thought to be critical in shaping cognitive and socio-emotional development through their effect on the central nervous system at a receptive and sensitive time in its development (Jacobsen et al., 2002). Parent-child interactions in the child's first year may have a lifelong influence on the child's development through their influence on the development of the child's brain (Jacobsen et al., 2002).

Brain development research has led to three key findings often applied to early child development:

- critical periods exist for brain development (usually in the first two to three years)
- children's brains are relatively plastic compared with mature brains
- optimal brain development takes place in enriched environments.

While early development, particularly in the child's first year, is important in further development, it is not fully deterministic. Helen Wilson (2002: 192) from Massey University suggests the critical role of the first three years in brain development has been overstated at the expense of later years (see also Smith et al., 2000: 24). Subsequent research indicates that mature brains retain plasticity and critical periods are complex, vary with different sensory systems and could be extensive (Corrie, 2000: 37). In addition, much research on brain development has been done on animals, mostly rats (54 percent), with less than one percent on children (Corrie, 2000: 35).

One challenge is to appropriately combine evidence from biological and animal studies with knowledge about humans from the social and natural sciences (Mustard, 2002: 24). The study of human brain development suggests a poor early environment can negatively affect the brain's development with lasting effects. Brain development is most active in the early years, but some pathways are developed later, for example, literacy. More complex developments, such as behaviour and emotions, may be influenced at different stages (Mustard, 2002: 32; Jacobsen et al., 2002).

Brain development in early childhood influences health, learning and behaviour throughout life (Mustard, 2002: 26). The debate centres on the relative significance of the first years in the brain's development in relation to later development.

## Impact of Maternal Employment

*International research suggests maternal employment in itself has no significant negative effects. Extensive maternal employment in the first year may lower cognitive outcomes slightly, particularly when combined with poor quality non-maternal care or poor quality early childhood education.*

*New Zealand studies do not support international research into the negative effects of maternal employment, suggesting its applicability to New Zealand is limited. However, New Zealand research has not examined maternal employment in the earliest years of a child's life.*

One area of research has focused on attachment theory, which argues that the bond between a child and their primary caregiver, usually the mother, affects the child's personality development and subsequent interpersonal relationships and behaviour. Attachment has generally been assessed by handing an infant to a stranger while the mother leaves the room (called a 'Strange Situation'). The child's reaction when the mother returns is used to determine whether the child has a strong attachment to the mother.

A lot of literature has been developed in the area of attachment, with conflicting conclusions. Jay Belsky, a leader of this research, initially argued that maternal employment, and the associated early childhood education, was not harmful to children, but reversed his conclusions about extensive maternal employment in a child's first year, particularly for depressed mothers. Belsky found evidence of poorer attachment at age one and increased aggression at ages three to eight (Belsky, 2001; Cleveland and Krashinsky, 2003:3). However, it is questionable whether his research controlled adequately for unobserved parental characteristics. Overall, it seems most child-mother attachments are not adversely affected by maternal employment, although a possible link exists between extensive maternal employment when the child is very young and poorer attachment, particularly for boys (Meyers et al., 2002: 36; Crockenburg, 2003: 1035).

Significant amounts of research indicate maternal employment has neutral or positive cognitive effects on young children. However, much of this research does not control, or adequately control, for maternal characteristics that independently correlate with positive outcomes for children. These differences may have independent effects on children's outcomes, for example, mothers who work tend to have characteristics that mean their children would do well anyway (Currie, 2003). Research that does not account for these differences can draw biased conclusions about the positive effects of maternal employment.

In 2003, Janet Currie undertook a review of the research about the impact of maternal employment, examining previous findings to determine why the results differed. Currie (2003: 18) found that the more robust research that controlled for external factors (such as maternal education and the nature of mothers' interactions with children) generally agreed that there is a slight negative cognitive effect of early

maternal employment, particularly for higher socio-economic families (see also Gregg and Washbrook, 2003: 54; Cleveland and Krashinsky, 2003: 11).

While more rigorous controls indicate some small negative outcomes of extensive maternal employment for very young children, criticism exists that the controls 'control too much' and isolate aspects of life that cannot be separated (Newcombe, 2003: 1050). This can cause misleading results. Mora Newcombe argues that two variables in particular should not be removed when assessing the impact of maternal employment on children: maternal depression and maternal income (maternal employment reduces the likelihood of maternal depression). Removing these variables eliminates the positive effects of mothers in employment that are brought about through higher income and lower maternal depression. This creates a more negative picture of the effects of maternal employment than may be the case (Newcombe, 2003: 1051).

The National Longitudinal Study of Youth in the United States found small negative effects of maternal employment in a child's first year. A range of studies using the study's data also generally related early maternal employment to poorer behavioural and cognitive outcomes during early childhood for most children.<sup>2</sup> The effects are smaller or absent if the mother is in paid work only from the child's third year (Nechyba, McEwan and Older-Aguilar, 1999). However, these data and associated studies did not include controls for the quality of care received at home or quality of early childhood education, and much of the early childhood education in the United States is of poor quality (Cleveland and Krashinsky, 2003: 5).

The National Institute of Child Health and Human Development (NICHD) in the United States undertook a longitudinal study with an extremely large data set and included measures to enable a full and robust analysis of the effects of maternal employment (Cleveland and Krashinsky, 2003: 5). This study was designed to examine, and potentially resolve, questions raised by previous studies' methodological limitations. Therefore, the NICHD study is one of the most robust and comprehensive longitudinal studies (Love et al., 2003: 1032). An analysis of NICHD data initially showed that children of mothers employed in the child's first year had higher cognitive scores. However, once controls were included to manage other influencing factors, such as the mother's education and language skills, this study found small negative effects of maternal employment before the child was nine months (5–7 percent on a school readiness test at age three). This effect was more significant for mothers who were employed more than 30 hours each week in the child's first year (Brooks-Gunn, Han and Waldfogel, 2002; Cleveland and Krashinsky, 2003: 6).

Paul Gregg and Elizabeth Washbrook (2003: 37, 54) used data from a cohort of 12,000 births in the Avon area of the United Kingdom in 1991 and 1992 to explore the effects of maternal employment on children's cognitive and behavioural development. Data on children's achievement were available up to age eight. In their preliminary results Gregg and Washbrook noted negative effects on literacy at age

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<sup>2</sup> Harvey examines six studies undertaken on the basis of data from the National Longitudinal Study of Youth, the conclusions of which conflict due to different sample selection and methodologies (Harvey 1999: 18).

seven of full-time maternal work in the child's first 18 months, but not for part-time work or work after 18 months. This effect, while statistically significant, was very small (about -0.1). In their research, the negative effects were mostly correlated with full-time work and unpaid care of children (that is, informal care by family and friends), but the effects tended to be positive for uneducated mothers, lone mothers and the poorest households.

These findings align with findings that consistent maternal time in the first year (20 hours or less of paid work each week) is beneficial over the long term from a neuropsychological perspective, particularly for social and behavioural development. However, consistent maternal time is not necessary after that, with the likelihood that the socialising atmosphere of early childhood education is beneficial after age one. This corresponds with the neurological developmental milestone at one year: maturation of the orbitofrontal cortex that helps regulate emotions (Neidell, 2002: 24). This enables the child to better manage the social and other challenges of an early childhood education environment. The ongoing positive effects of consistent parental care in the child's first year also correspond with evidence that any negative cognitive effects of a mother working in the child's first year may last, at least until age six (Ruhm, 2002) with possible small effects up to age eight (Han, Waldfogel and Brooks-Gunn, 2001: 352).

The conclusions about the effects of early maternal employment tend to suggest the child's first year is critical, with possible small negative cognitive and behavioural effects of full-time maternal employment in that first year (Currie, 2003: 18; Ruhm, 2002: 22). However, these effects are small and generally negligible after the child's first year (Currie, 2003). The extensive NICHD study showed the negative cognitive effects of first year maternal employment were no greater than the negative effect of having an older sibling and could be offset by high quality early childhood education (Cleveland and Krashinsky, 2003: 5–6; Love et al., 2003: 1031). What should be noted is that several factors are involved in poor outcomes for children: it is when a child is in poor quality, extensive early childhood education or non-maternal care from a very young age that negative outcomes can occur, particularly if combined with poor quality interactions at home (Cleveland and Krashinsky, 2003: 3; Ahnert and Lamb, 2003: 1048; Lamb 1999: 50).

The degree to which these results can be generalised to New Zealand is debatable. New Zealand research on maternal employment indicates no significant effects of maternal employment on children's academic achievement. A Christchurch longitudinal study indicates little effect of hours of maternal employment on academic achievement of children at ages 8, 10, 11, 12, 13 and 15 (between 0.4 percent and 2 percent of the variation in achievement measures). This research focused on concurrent maternal employment with the children at those ages, not employment during the child's preschool years. The relationships between maternal employment and academic achievement were similar for males and females (Horwood and Fergusson, 1999: 1017). In addition, no evidence was found of a relationship between maternal employment and child academic achievement even when the child's age on the mother's re-entry into employment and hours of work were examined. This was true for children of different genders and social backgrounds (Horwood and Ferguson, 1999: 1021–2).

In *Competent Children at 10* Cathy Wylie, Jean Thompson and Cathy Lythe (2001) also concluded no evidence of negative effects of maternal employment, including early maternal employment, at any stage of a child's development. *Competent Children at 12* looks at the effects of maternal employment at, and after, age five (Wylie et al., 2004). No associations were found between employment patterns and children's competency levels at age 12 once maternal qualifications and family income were taken into account. No cumulative advantages or disadvantages of maternal employment were apparent for children at age 12 from maternal employment over the previous seven years. Some indicative associations existed with various phases, but these differed, which suggests they resulted from factors other than maternal employment (Wylie et al., 2004: 51–52). However, data on maternal employment were only available from age five, so the first year was not examined specifically.

New Zealand research suggests the New Zealand context is sufficiently different from the contexts in the United States and United Kingdom to lead to different outcomes for children, which makes the applicability of international research to New Zealand questionable.

## **Related Factors Influencing the Impact of Maternal Employment**

*While lower SES and lower parental qualifications have been consistently correlated with children's lower achievement, the key factor in children's outcomes is the quality of parental interactions. It is not who the parents are that matters, it is what they do in relation to their children.*

*On the whole, the quantity of maternal interaction with children increases to offset an absence due to paid work.*

*Fathers' involvement in parenting also increases to offset any decrease in maternal involvement due to paid work. Little research about the impact of this on children exists, although some research does suggest that greater paternal involvement with children increases their cognitive outcomes.*

*Parental interactions are influenced by parents' mental well-being, which in turn is affected by the nature and conditions of work (among other things).*

*Mothers' part-time paid work may have better cognitive outcomes for very young children and generally reduces mothers' stress and role conflict, thereby improving their well-being and interactions with their children.*

*A mother's long hours and non-standard hours of paid work have a negative impact on child development.*

*Increased income (as a result of a mother's paid work) improves child outcomes in cases of extreme poverty.*

### **Child-related factors**

Some international evidence indicates children of different genders respond differently to maternal employment. In their study of NICHD data, Jeanne Brooks-Gunn, Wen-Jui Han and Jane Waldfogel (2002) found more negative cognitive effects of maternal employment for boys than girls, after controlling for type and quality of early childhood education. Some evidence exists that boys of working mothers have more behavioural problems (for preschoolers Fuligni, Galinsky and Paris, 1995: 14, and for middle-class adolescent boys Hoffman and Youngblade, 1999: 290). However, the applicability of this research to New Zealand is not clear.

The Christchurch longitudinal study found the relationship between maternal employment and academic achievement was similar for males and females (Horwood and Fergusson, 1999: 1017).

### **Family and parental factors**

Research has consistently found that maternal and parental qualifications and SES have the strongest relationships to child outcomes. However, these factors may not be the most critical.

The Effective Provision of Preschool Education (EPPE) Project is a long-term research project on the impact of preschool education in the United Kingdom, with an associated project in Ireland. The team has collected a wide range of data on 3,000 children, including home and early childhood education observations of a sample of children. Initial findings from the children at age seven indicated the key factor influencing children's outcomes was the quality of parental interactions (Sylva et al., 2003). This was even more powerful than parental qualifications or SES, which suggests parental qualifications and SES may be proxies for the quality of interactions.

The EPPE Project found 'at-home good parenting' to have positive effects on a child's achievement even after all other influencing factors were taken into account. 'Good parenting' in the home included a secure and stable environment, intellectual stimulation, parent-child discussions, constructive social and educational values, and high aspirations relating to personal fulfilment and good citizenship (Desforges, 2003).

In a Dunedin longitudinal study, mothers' attitudes towards their children and their behaviour towards them at age three were predictive of intellectual performance and language at age five (Silva and Stanton, 1996: 251). 'Maternal sensitivity' is the key indicator that seems to have the greatest effect on child outcomes (NICHD, 2003: 992).<sup>3</sup> This is the mother's ability to respond appropriately and effectively to her child's needs (for example, responding with positive regard, non-intrusively and in response to distress). One theory is that continuous non-maternal care initiated when the child is very young may interfere with a mother's ability to 'read' the signals from her child and identify behavioural patterns, affecting her ability to respond appropriately and sensitively (for example, NICHD, 2003: 981). However, increases in maternal sensitivity over time also predict lower levels of behavioural problems (NICHD, 2003: 994). This indicates that levels of maternal sensitivity are not fixed, but can improve over time, with associated improvements in child outcomes.

Another theory is that combining motherhood with paid work leads to increased maternal stress and tiredness, which leads to poorer quality parenting. Gregg and Washbrook (2003: 52) found that mothers who returned to paid work full time before the child was 18 months reported significantly higher levels of stress and tiredness when the child was 21 months than mothers who remained at home. Mothers who returned to paid work part time did not experience these levels of stress. Maternal tiredness was positively correlated with cognitive outcomes, rather than negatively correlated, suggesting tiredness was a result of increased effort in parenting leading to positive outcomes for the child. However, increases in maternal stress and tiredness were correlated with poorer behaviour, although it is hard to determine causality as poor behaviour is more tiring to manage.

Considerable evidence exists that maternal employment is beneficial for mothers and children from disadvantaged families, uneducated mothers, sole mothers and the

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<sup>3</sup> Research on fathers as primary caregivers suggests they also respond sensitively to their children (Russell, 1999), so 'maternal' may be able to be read as 'primary caregiver'. More research is needed to confirm this.

poorest households (Gregg and Washbrook, 2003: 54). This has been variously related to increased mothers' positive mental well-being and self-esteem, increased income, greater access to networks provided by work, and increased work-education values (Currie, 2003: 18; Desforges, 2003; Cleveland and Krashinsky, 2003: 11). Employment for low SES families and positive mental well-being are also clearly linked, possibly due to increased income effects (Hoffman and Youngblade, 1999: 11, 284).

Breastfeeding has been correlated with positive cognitive outcomes for children even when maternal and other family characteristics have been taken into account (for example, positive cognitive effects noted up to age seven (Silva and Stanton, 1996: 29)). Gregg and Washbrook (2003: 55) examined whether employment prevented breastfeeding, with a potential associated negative impact (or a lack of a positive impact) on cognitive development. They found employment before a child was 18 months had no impact on the initiation of breastfeeding, but did affect duration. However, despite evidence that duration is important, the shorter duration did not seem to have a significant impact on child cognitive outcomes (Gregg and Washbrook, 2003: 55).

### *Quantity of parental care*

In two-parent families, children's interactive time with mothers and fathers has increased sufficiently over the last 30 years to counteract any decrease of time in the house associated with maternal employment (O'Brien and Shemilt, 2003: 24). A study of middle-class German families found the mothers of children in out-of-home care compensated for the time they spent away from the children by interacting with increased intensity when they were with their children to such an extent that the total amount of attention children received was the same as for children of non-working mothers (Ahnert and Lamb, 2003: 1044).

Margaret O'Brien and Ian Shemilt (2003: 26) found, in a United Kingdom study, that the children of employed mothers had slightly less time with their mothers (86 percent) but more time with their fathers. The difference between employed and not employed mothers was less than expected, as employed mothers tended to forgo housework, sleep and leisure activities to give more time to their children (O'Brien and Shemilt, 2003: 25; Gregg and Washbrook, 2003: 9).

### *Fathers' involvement*

Limited research exists about the role and impact of fathers as caregivers on families and individual child outcomes (Russell, 1999: 57, 71).

Fathers generally take more responsibility for childcare in houses where the mother is in paid work. The time spent by fathers with children accounts for one-third of total parental childcare time (O'Brien and Shemilt, 2003: 24). On the whole, the involvement of fathers in parenting increases to offset any decrease in maternal involvement due to paid work (Gregg and Washbrook, 2003: 54).

In New Zealand in 1998, male parents in two-parent families with preschool children were more likely to be in full-time work than other parents. Of those fathers, 43.7 percent worked more than 50 hours each week (McNaughton and

O'Brien, 1999). This reflected financial and psychological pressures (for example, a fear of unemployment).

A survey of men's and women's roles in New Zealand society, conducted under the International Social Survey Programme, found a widespread view (96 percent of respondents) that both parents are equally important to their children. At the same time 80 percent of respondents considered men should be more involved in their children's lives (Ministry of Social Development, 2004b).

An Equal Employment Opportunities Trust survey indicated that 80 percent of fathers wanted to spend more time with their children (Equal Employment Opportunities Trust, 2003). As for mothers, the family is more psychologically central to fathers than work (McCann, 1999a: 183). Men report similar role conflict between work and parenting to women, which reflects the changing expectations of what it means to be a good father (McNaughton and O'Brien, 1999: 20–21).

Christopher Ruhm (2002: 27) suggested time investments by fathers might substitute those of mothers, but the evidence from his research is unclear (Currie, 2003). Gregg and Washbrook (2003: 54) concluded that fathers' greater involvement when mothers were employed had beneficial effects on children's cognitive development, but not on their behaviour.

Other research suggests (Russell, 1999: 72-3):

- children's cognitive and social skills are more advanced with greater father involvement
- primary caregivers (either the mother or father) show more affection to their children than secondary caregivers and fathers who are primary caregivers show the most affection
- primary caregiving fathers seem more attuned to their children's play behaviour than other fathers.

Research suggests fathers are important to children in complementary ways to mothers. Children who experience the absence of a father before age two tend to be more seriously affected than children who lose a father later. It is thought fathers play differently with their children in ways that are beneficial. For example, mothers tend to play with their child at the child's pace, letting the child lead; fathers tend to play in a more 'rough and tumble' way, letting the child learn how to get excited and wind down. Fathers tend to be more directive in 'showing how' and stress risk-taking and adventure (McCann, 1999a: 54).

In a longitudinal study of Swedish families, Carl-Philip Hwang and Michael Lamb (quoted in Bittman, Hoffman and Thompson, 2004) found fathers' involvement with their children remained about the same over time, so fathers involved in the care of babies were still involved at age eight.

The different methodologies and small sample sizes of these studies make it difficult to draw substantive conclusions about the father's role as caregiver in relation to the mother. What is interesting is the lack of any significant effect of fathers as primary caregivers over mothers (Russell, 1999, 74). Gregg and Washbrook (2003: 21)

suggest that since the effects of maternal and paternal employment seem to work in the same direction, the time investments of mothers and fathers may have similar effects on children.

An increase in fathers' work hours has a negative effect on daily involvement with children, but fathers tend to compensate with increased interactions in weekends. Interestingly, high maternal income is also correlated with increased paternal involvement, possibly indicating the mother's time and work is more valued when her income is higher (O'Brien and Shemilt, 2003: 26, 29).

In 1996, 5 percent of New Zealand fathers with children aged under six worked less than 30 hours each week (with an additional 13 percent not in paid work). Sixty-two percent of New Zealand fathers worked 50 hours each week or more; of these, 20 percent worked 60-hour weeks (Callister, 1999: 30). The quality of relationships between fathers and children has been found not to be affected by long work hours, but adversely affected by overwork (even with shorter hours) (O'Brien and Shemilt, 2003: 28). This corresponds with research on the impact of stress on mothers' and parents' interactions with their children (Fulgini, Galinsky and Poris, 1995: 21). However, a 60-hour working week means five 12-hour days or seven 8.5-hour days, which seems likely, through exhaustion and stress, to affect the quality and quantity of time left for interacting with children.

Interestingly, United States research on well-educated men with wives in paid work indicates they are paid and promoted less than men with stay-at-home wives, possibly because they do not work for as many hours (Hutton and McNaughton, 1999: 76). A study of selected professional occupations in Britain, Norway and France found men who took up family-friendly or caregiver options also experienced negative impacts on their careers (James, 2002: 4). This suggests a new 'parent path' could be disadvantageous to men in the way the 'mummy track' has been for women (that is, working flexible hours or part time has led to some women being side-lined in their careers). However, a further United States study indicated that 74 percent of the men surveyed preferred a 'daddy track' over a 'fast-track' in their careers (Bittman, Hoffman and Thompson, 2004). This research's applicability to the New Zealand context has not been tested.

### *Parents' mental well-being*

Consistent evidence suggests mothers' mental well-being has a significant impact on their children's development. Pre-natal depression may have a physiological effect on the developing foetus and their later susceptibility to psychopathology. Many studies have shown that post-natal depression affects the development of children's brain functioning and associated behaviours (Dawson et al., 2003: 1159). Chronic depression has the greatest negative effects on children's outcomes, but remitted early depression also has lasting effects (Dawson et al., 2003: 1171).

About 4 percent of fathers suffer from significant depression after a child's birth (compared with 15 percent of mothers) due to the transformation of their lives and relationship with their partner, sleep deprivation and role conflicts. The Fathers Who Care Project identified that 70 percent of fathers also experienced role conflict between fathering and work (McNaughton and O'Brien, 1999: 21). Men are more

likely to become depressed if their partner suffers from post-natal depression. It seems likely fathers' depression would also affect children's outcomes.

While evidence suggests maternal employment reduces the likelihood of depression (Newcombe, 2003: 1050), evidence also suggests the mental health of depressed mothers is worse if they are employed (for example, Fuligni, Galinsky and Poris, 1995). These two findings may not be contradictory: work might generally prevent depression arising, but once a mother is depressed, work might increase stress and aggravate the depression. It seems likely the effect of work to prevent or aggravate depression is particular to the mother and the way she experiences her work and life situation. It is clear work provides a relief to the stress at home for some mothers (for example, Hochschild, 1997: 112). One theory is that the degree of congruence between a mother's role as homemaker or employee is associated with her mental well-being (Hoffman and Youngblade, 1999: 12). However, this theory demonstrates the difficulty of determining causality, as mothers may feel better about their roles if they are generally happy.

Mothers' job satisfaction has been linked to higher levels of self-control and fewer conduct problems for girls (Fuligni, Galinsky and Poris, 1995: 28). Mothers' role conflict can increase conduct problems in boys and lessen maturity in girls (Fuligni, Galinsky and Poris, 1995: 27). Mothers with high levels of stress can be less accepting of adolescents, which affects adolescent impulse control, feelings of anxiety and depression.

How work affects parents affects their children. If a parent is negatively stressed at work, the impact on children is likely to be negative; if the person is stimulated by a degree of stress and finds it increases job satisfaction, stress in itself may not be negative. It is the nature and level of stress in relation to individual characteristics that matters, so the quality of working time may have as much, if not more, of an impact on family relationships as the quantity of work.

### *Increased income*

Mixed evidence exists about the effects on children of the increased income associated with a mother in paid work. While increased income makes a difference to child outcomes in cases of extreme poverty, no compelling research indicates it makes a significant positive difference for other children (Nechyba, McEwan and Older-Aguilar, 1999: 23, 34; Newcombe, 2003: 1051–2). Susan Mayer (2002) prepared a paper on this issue for New Zealand and also concluded the positive outcomes of increased income were greater for poorer families, but found a small positive effect for other families (2002: 9–10, 66–68). However, family income for those other families would need to be more than doubled to have any statistically significant effect and that effect was small. Mayer (2002: 9) suggested that if increases in income made a greater difference to poor families than better off families, the estimates of a small positive effect might understate the effects for poorer families.

### ***Work-related factors***

As discussed above, employment conditions are important in relation to the mother's time spent away from home and parenting behaviours. Research indicates that low job satisfaction and work-place tension have negative impacts on child development

(OECD, 2003: 138). Difficult job conditions create psychological distress, which affects parenting, which affects child outcomes. Employed parents with demanding jobs have higher levels of stress, which predict depression and physical illness in women studied (Fuligni, Galinsky and Poris, 1995: 31). On the other hand, job complexity is positively correlated with parents valuing self-direction, autonomy and intellectual flexibility, providing more cognitive stimulation and affective warmth, and having authoritative childrearing practices (Fuligni, Galinsky and Poris, 1995: 33).

Part-time work and family-friendly policies that allow parents time with young children have a positive impact on cognitive development (OECD, 2003: 138). Family-friendly workplace policies can help to reduce negative stress (for example, Reynolds, Callender and Edwards, 2003). However, part-time work, the most common 'flexible arrangement' for women, can reduce career prospects and opportunities. Part-time work conditions are generally worse than full-time work: fewer promotion opportunities, fewer financial benefits (such as less superannuation and sick and annual leave) and fewer training opportunities (Bittman, Hoffman and Thompson, 2004: 47). In addition, part-time work is available only in a small range of sectors, constraining women's choices and career opportunities (Byrne, 2002: 17–18).

Two types of part-time work exist: work negotiated by 'career women' and work that suits employers (with more unreliable hours, and so on). The latter type has worse conditions of employment, but both suffer from a lack of promotion opportunities (State Services Commission, 2002: 71; Bittman, Hoffman and Thompson, 2004: 47-8).

Few fathers take up flexible work options compared with mothers. For example, in Australia in 1999, 34 percent of women used part-time work arrangements to care for children compared with only 1.9 percent of men. The key barriers to fathers taking up longer term, unpaid parental leave, as well as flexible work arrangements, include financial cost, perceptions about 'men's work' and a fear of losing employment or career opportunities.

Research indicates that long and non-standard hours have a negative impact on child development (OECD, 2003: 138). International research indicates the amount of maternal work seems to have an impact on child outcomes in the early childhood years. Part-time maternal paid work (20 hours or less) yields larger benefits and lower costs than full-time paid work, but benefits decline or become negative as hours of paid work increase (Ruhm, 2002: 21–22; Jacobsen et al., 2002: 8). A longitudinal United Kingdom study found that increasing the amount of maternal part-time paid work before the child was age five by one year lowered the chance of a child achieving at least one A level by 3–6 percent; whereas full-time paid work lowered the chance by 7–9 percent (Gregg and Washbrook, 2003: 15–16).

## Impact of Early Childhood Education

*International evidence consistently indicates that high quality early childhood education has beneficial cognitive outcomes for children and particularly beneficial outcomes for children from disadvantaged backgrounds.*

*Research suggests early childhood education may have slight negative effects on behavioural outcomes.*

*In New Zealand, early childhood education generally has a lasting positive impact on children's cognitive development. The quality of education makes a significant difference.*

*Positive effects of high quality early childhood education seem to have a lasting impact internationally, particularly for disadvantaged children, although they can be offset by poor school experiences.*

*Poor quality, extensive care has more negative cognitive outcomes, particularly for babies and infants. Low quality informal care may have the worst cognitive outcomes for infants, although the definition of 'informal care' used in international studies includes 'family', so does not reflect the nature of New Zealand extended family or whānau care arrangements.*

The two microsystems of family and early childhood education are interrelated in their impacts on children. Whether a child is disadvantaged by maternal employment largely depends on the quality of alternative care relative to the quality of maternal care (Gregg and Washbrook, 2003: 55). However, Lieslotte Ahnert and Michael Lamb (2003: 1046) point out that non-maternal care cannot be substituted for maternal care, as it is different in nature. Early childhood education providers focus on cognitive stimulation and behaviour management to maximise social harmony; parents better anticipate individual children's reactions and minimise their distress. Therefore, parents have the greatest influence on children's socio-emotional development.

The effects of early childhood education on young children depend to a large extent on the nature and quality of their experiences in early childhood education. Research generally agrees that quality early childhood education has positive cognitive outcomes for children, but extensive early childhood education may have slight negative behavioural effects.

Research into stress levels (as measured by cortisol levels) in children in early childhood education settings has identified that stress increases as the child's day progresses. This is in contrast to children at home (and the same children at home), whose stress levels decrease during the day. While no evidence suggests increased cortisol levels are damaging to young children, it is known that in animals, early experiences of stress shape the neurobiological systems underlying fear, anxiety and stress reactivity, and high levels of cortisol can impair immune functioning (Watanura

et al., 2003: 1006–7). Therefore, high levels of cortisol may impair children’s immune functioning and increase their anxiety and stress reactivity.

Cortisol increases throughout the day are highest for toddlers (children aged two to three) and are worse in poorer quality early childhood education settings. Social fear predicted larger increases in cortisol, as did social withdrawal, but it is hard to determine the direction of causality (Watanura et al., 2003: 1015–16). One theory is that at the toddler stage, peer play is becoming established, but toddlers have limited social skills, which can cause increased stress and even social withdrawal for children who are most stressed. These stresses would be greater in poorer quality, more chaotic settings.

Interestingly, Laurie Miller Brotman and colleagues (2003: 1055) suggest increases in cortisol are exactly what you would expect from a day spent in developmentally appropriate, yet challenging, social interactions with peers and adults. The absence of cortisol might indicate an inability to prepare adequately for a novel or challenging situation. This suggests the presence of increased levels of cortisol may not automatically indicate a problem with early childhood education settings, although it may still have implications for children’s immune functioning.

Gordon Cleveland and Michael Krashinsky (2003) suggest studies that show no effect of early childhood education on children do so because they do not have the information about quality that would show that high quality has a positive effect and low quality a more negative effect. This means the effects of good quality are cancelled out by the effects of poor quality (for example, Ruhm, 2000).

Janet Currie (2003: 26–7) considers it hard to draw conclusions about the direction of research findings regarding the quality on outcomes of early childhood education until sample selection issues have been adequately addressed.

In a literature review for the Ministry of Education, Thomas Nechyba, Patrick McEwan and Dina Older-Aguilar (1999: 30) concluded that higher quality early childhood education maximised positive effects and the limited evidence about positive quality effects was largely due to poor measures of quality. For example, most research that tried to identify quality used structural measures (such as staff to child ratios) rather than process measures (such as staff to child interactions) that were more directly related to the quality of children’s experiences and associated quality outcomes. Most process factors require the systematic observation of interactions between adults and children, which many studies have not undertaken.

Many studies have drawn a link between early childhood education and children’s behavioural problems. However, most of these studies have suffered from poor sample selection or not adequately controlled for independent factors (Meyers et al., 2002: 35).

Anne Smith and colleagues (2000: 47) concluded from the literature that high quality education from infancy had a positive effect on children’s cognitive and behavioural outcomes, provided the experiences were of high quality. The NICHD study specifically set out to investigate the possible links between early childhood education and behavioural problems. The study found that early and extensive

experience of non-maternal care was associated with an increased risk of behavioural problems with children aged four and a half. However, children in high quality early childhood education had fewer behavioural problems than children in poor quality education (Meyers et al., 2002: 36). Interestingly, this is not the case for disadvantaged children, who benefit from high quality early childhood education (Meyers et al., 2002: 37).

Further work with the NICHD data indicated negative behavioural effects were related to the *quantity* of time in early childhood education, even when quality, type and instability of care were controlled (NICHD, 2003: 976). However, the work of John Love and colleagues (2003) to add data sets of much higher and much lower quality to the NICHD data indicated that quality did matter once a wider range of quality was observed. High quality had much better outcomes for children and low quality had much poorer outcomes (Love et al., 2003: 1031). The EPPE Project also indicated that early childhood education might have slight negative behavioural effects compared with home care or care by relatives (Melhuish, 2001).

The Sydney Family Development Project, a study of high quality care in Australia, showed that instability of care was an important factor in poorer behavioural outcomes; whereas quantity of time was not (Love et al., 2003). This is in contrast to the NICHD study where quantity was the main factor in poor behavioural outcomes and instability had little effect. These different results show the problems inherent in generalising results from one study in one national context to other contexts. However, it seems likely the early childhood education situation in New Zealand is more comparable with that in Australia than with the lower quality United States system, and that the results of the Sydney study are probably more relevant.

In the NICHD study, children in good quality early childhood education did significantly better than children in low quality education to the extent that good quality early childhood education was better than sole maternal care (Cleveland and Krashinsky, 2003: 13). Good quality early childhood education also lessened effects of poverty and maternal depression on the development of infants and preschoolers (Shonkoff and Phillips, 2000). General agreement exists that good quality early childhood education has the most beneficial effects for disadvantaged children (for example, Sylva et al., 2003).

Overall, Wylie, Thompson and Lythe found early childhood education had a lasting positive effect on cognitive development and high quality early childhood education had a more positive impact (2001: 78; 2004). The positive effects tended to increase as the child got older, with more significant positive outcomes at age 12 than in previous years (Wylie et al., 2004). This research also found quality, as indicated by staff responsiveness, made a significant difference to children whose mothers' highest qualification was below tertiary level, but no real difference to children whose mothers had a tertiary qualification (Wylie, Thompson and Lythe, 2001: 63).

The finding that high quality early childhood education has particular benefits is consistent with the general conclusions from international research. However, the consistent findings of the New Zealand studies, that formal early childhood education in general has overall positive cognitive effects, are somewhat different from

United States research, such as the NICHD study, which generally shows such positive effects only for 'high quality' early childhood education.

These positive results for general early childhood education in New Zealand may be due to the different socio-cultural context and relatively higher quality of New Zealand early childhood education compared with the United States. It should be noted that United States early childhood education is generally of poorer quality than other comparable countries (for example, Ruhm, 2000). A 1993 study of the quality of early childhood education in the United States found only one in seven centres provided a level of quality needed for healthy development, which meant 86 percent were of poor quality (Cleveland and Krashinsky, 1998: 30). No comparable figure exists for New Zealand, although Cathy Wylie, Jean Thompson and Anne Kerlake Hendricks (1996) concluded that 24 percent of early childhood education sessions observed were of poor quality (see also Appendix B).

This may mean United States studies find negative effects of early childhood education on young children because the effects of high quality early childhood education are negated by the larger amount of poor quality education. It may be possible that if most early childhood education is of high quality, the effects will generally be positive. This possibility is supported by the work of Love and colleagues (2003: 1022–3) who note that the Australian early childhood education system is of much higher quality overall than the United States system because it is highly regulated (more like New Zealand). Love and colleagues proposed that a different relationship could exist between early childhood education and children's development. They combined the data sets from the United States NICHD study and the Sydney Family Development Project and found that, unlike in the NICHD study, being in formal early childhood education in the Australian study was associated with higher learning competencies because the early childhood education was of higher quality overall (Love et al., 2003: 1031).

Eleanor Maccoby and Catherine Lewis (2003: 1071) also suggest the negative child outcomes in United States studies may have more to do with the nature of its early childhood education than non-maternal care.

With regard to very young children, the study of NICHD data by Brooks-Gunn, Han and Waldfogel (2002) indicated the slight negative cognitive effects of maternal employment in the child's first nine months could be offset by participation in good quality early childhood education and/or by increased sensitivity of care provided when the child was home in the evenings or weekends.

The NICHD study did not indicate the child's first year was any more critical than other periods for young children in relation to negative behavioural outcomes. However, it did find the total amount of early childhood education was correlated with poorer behavioural outcomes. If a child started extensive early childhood education earlier, they were likely to continue at this rate. This made it difficult to separate the effects of early childhood education from extensive and continuing early childhood education. What was clear was that children in extensive, early and continuous early childhood education had the poorest behavioural outcomes (NICHD, 2003: 999).

The New Zealand Competent Children study found positive correlations between the length of early childhood education experience and cognitive outcomes at ages 6, 8, 10 and 12 (Wylie et al., 2004). Twenty-eight percent of children in the study started early childhood education before age one, with 16 percent starting before age two. Wylie and colleagues (2004) found, in general, children who started their early childhood education before age two had higher scores of around 4–5 percent in reading comprehension and mathematics after taking maternal qualification and family income into account. Children who had experienced 48 months of early childhood education had slightly better outcomes than children who had experienced less than 24 months, taking family income into account. Once maternal qualification was taken into account, this difference became indicative. This research suggests that early and extensive early childhood education in New Zealand does not lower cognitive outcomes for children and seems to improve them.

### ***Informal care (regular care by family, friends or neighbours)***

Extensive research in the United Kingdom using data from a cohort of 12,000 births indicated that high quality, centre-based care led to better cognitive outcomes for children aged under two than informal, home-based care. The worst effects of non-parental care were noted for children who were cared for informally by family or friends (Gregg and Washbrook, 2003: 56). The negative effects of non-parental care by informal carers may be due to the poorer sensitivity of the care and associated poorer quality interactions (Sylva, 2003), although the research drew no conclusions. This is interesting, because it is sometimes assumed that for very young children a home-like environment with friends or relatives is better for children than formal early childhood education environments.

The EPPE Project found that children cared for by close relatives were more co-operative and less anti-social, but had lower cognitive scores than children in early childhood education settings (Melhuish, 2001). This study also found that parent-child interactions had the most positive effect on child achievement (Melhuish, 2001; Desforges, 2003). Similarly, the Competent Children Project found staff-child interactions in early childhood education settings were the most important for positive outcomes for children (Wylie, Thompson and Lythe, 2001). This suggests it is the quality of the interactions that is most important for children's outcomes, rather than the context (that is, home, informal or formal care).

Applying international research about informal care in the New Zealand context is problematic, as New Zealand concepts of family and whānau, relationships and responsibilities are not consistent with the nature of families and responsibilities in the international research on maternal employment and early childhood education. For example, research that treats fathers, aunts and grandparents as 'other carers' with neighbours or child-minders (for example, the NICHD study) could be problematic in a New Zealand context, as could research findings that 'informal' care (that is, care from relatives, neighbours and so on) leads to the worst cognitive outcomes for young children in the United Kingdom (Gregg and Washbrook, 2003). As suggested above, it is the quality of the interactions that is the most important, and it seems likely the quality of interactions between a child and an adult neighbour or friend will be lower than with a close relative.

In New Zealand, 13 percent of families with children have an adult living with them in addition to the child's parents (36 percent of Pacific families, 27 percent of Māori families and 26 percent of Asian families). It seems highly likely the nature of these households and the relationships within them would affect the nature of the children's care. In addition, many families live near other family members and lead interconnected lives. In her study of the extended family in New Zealand, Mervyl McPherson (2003: 32–3) identified that proximity is strongly correlated with family contact, which is the main predictor of provision of help such as childcare. About 84 percent of people saw a relative once a month and 60 percent saw a relative once a week. Seventy-five percent saw a first degree relative monthly and 54 percent saw a first degree relative weekly.

Therefore, it seems likely that family or whānau care, including care by fathers, is far more like 'maternal' care in its nature and outcomes than care by neighbours. However, since Gregg and Washbrook's (2003) research did not distinguish between care by neighbours and care by close relatives such as aunts or grandparents, it is hard to identify whether there is a problem for New Zealand and if so, where it may lie.

### ***Do the positive effects of high quality early childhood education last?***

Compelling evidence exists that the positive effects of intensive preschool educational programmes for disadvantaged children, such as Head Start in the United States, do have lasting positive outcomes for children, but that these can be negated by poor schooling experiences (for example, Cleveland and Krashinsky, 2003: 10). Likewise, some evidence shows that any negative effects of maternal employment can be lasting, although this is not quite as clear (Ruhm, 2002; Harvey, 1999: 17; Neidell, 2002: 24).

In a two-year study to test the hypothesis that early educational and health enrichment for children aged three to five was associated with enhanced psycho-physiological functioning, the quality of early childhood education was associated with long-term changes in psycho-physiological development six to eight years later (Miller Brotman et al., 2003: 1054).

A longitudinal study of all children born in the United Kingdom in one week in 1970 indicates that children with some early childhood education experience achieved one-third of a standard deviation higher than those who had no early childhood education, even once other factors were controlled. This meant if the children with no early childhood education gained an average mark of 65 percent, children with some early childhood education would gain an average mark of 70 percent (Cleveland and Krashinsky, 1998: 24–5).

Cleveland and Krashinsky (2003: 15) suggest studies that show the fade-out of positive effects of quality early childhood education may have used biased measurement techniques. Once statistical problems are avoided, good evidence exists in every study that assessed those variables that there are long-term positive effects with less grade retention (that is, being held back a year) and special education and higher school graduation (Cleveland and Krashinsky, 1998: 27).

Strong evidence of lasting positive effects of ‘compensatory’ preschool is indicated by the Perry Preschool Project, which began in Ypsilanti, Michigan in 1962. This project was a classical treatment-control experiment with children randomly assigned to control and experimental groups. Children participating in the part-day preschool and parent education programme were followed up to age 19 and being tested at different intervals. The project began with a sample of 123 educationally high-risk preschool children. Fifty-eight took part in the project and 65 served as controls. At age 19, a clear pattern of differences existed between experimental and control children (see Table 4).

**Table 4: Long-term effects of the Perry Preschool Project**

<b>Long-term effect</b>	<b>Controls (%)</b>	<b>Experimental (%)</b>
Was classified as mentally retarded	35	15
Had completed high school	49	67
Had college or job training	21	38
Had a job	32	50
Had been arrested	51	31
Had been charged with serious crime	38	24
Was receiving public assistance	32	18

Source: Cleveland and Krashinsky (1998).

The conclusions of such longitudinal studies add support to the benefits to society of high quality early childhood education, particularly for disadvantaged children.

An economic analysis calculated a return of 2:1 in Canada for every dollar spent on high quality early childhood education and that most benefits were for the wider society. The study suggested child development benefits amounted to just under half the overall benefits and labour force participation benefits just over half (Cleveland and Krashinsky, 1998). While labour force participation benefits for the parent did not depend on the quality of the early childhood education, quality had an impact on the child’s future labour force participation and the future workforce’s capability.

Table 5 sets out the types of benefit shown to result from high quality early childhood education programmes.

**Table 5: Summary of benefits of high quality early childhood education programmes**

<b>Benefits</b>	<b>Parents' participation in work</b>	<b>Child development</b>
<b><i>Private</i></b>		
Parent	Increased family income Maintenance and development of skills Career progression	Increased family income improves outcomes for children in very low income families
Child		Increased cognitive and behavioural outcomes if quality of early childhood education is high Higher achievement in school and tertiary education Better employment outcomes and income
Employer	Retention and maximisation of skills and experience	More skilled future workforce
<b><i>Public</i></b>		
	Increased tax take Lower state support Increased national productivity	Lower costs to the state of remedial education, truancy, dropouts and crime More skilled future workforce Less state support required

## Related Factors Influencing the Impact of Early Childhood Education

*Children with particular temperaments (for example, overly reactive or socially fearful children) may find early childhood education experiences more stressful than other children. No evidence exists about the impact of this on children's outcomes.*

*Little evidence supports any significant difference in the impact of early childhood education on girls and boys, although some international research suggests early childhood education may have slightly more negative effects on boys than girls.*

*Quality early childhood education significantly improves the achievement of children with special needs.*

*The quality of staff-child interactions is most important in achieving positive outcomes for children. Key quality factors include:*

- *responsive and positive child-adult interactions*
- *staff providing guidance*
- *staff asking open-ended questions*
- *staff joining in play*
- *children selecting activities*
- *children completing activities*
- *a print-saturated environment.*

*The government's strategic plan for early childhood education focuses on improving participation, quality and collaborative relationships and is supported by additional funding.*

### **Child-related factors**

Evidence indicates different types of children respond to early childhood education differently and for some children the effects may be more positive or negative.

The NICHD study and studies of stress in children at early childhood centres suggest the relationship between the type, quantity and quality of early childhood education in relation to the child's personality will determine the levels of stress and behavioural problems in young children (Crockenberg, 2003: 1035).

One proposition is that a child with a 'difficult temperament' (that is, an overly reactive, difficult to settle or overly negative child) will find early childhood education experiences more difficult than do other children. The NICHD study looked specifically at this, but did not find any relationship between difficult temperament at six months and aspects of early childhood education. However, a global assessment of difficult temperament, such as in the NICHD study, did not isolate different types of negative emotion, and an assessment at six months considered only reactive components and could not include regulating components (as these only develop

after six months). Susan Crockenberg (2003: 1035) suggests these limitations may mean links between personality and early childhood education could not be identified. Her research (2003: 1036) suggests children who respond negatively and intensely to novel or frustrating events will become more stressed during long days in early childhood education.

Some evidence indicates the effects of early childhood education differ between girls and boys. By the middle of their first year, girls can regulate negative arousal better than boys (Crockenberg, 2003: 1036). Sarah Watamura and colleagues (2003: 1016) found preschool boys who showed signs of social fearfulness had higher levels of cortisol. Gregg and Washbrook's research (2003: 41) supports findings that early childhood education has more negative cognitive outcomes for boys than for girls.

Boys seem more adversely affected by poor quality of early childhood education and are more insecurely attached at 15 months (if they participate in early childhood education for more than 30 hours a week) (Crockenberg, 2003: 1035). There is also evidence that where boys of employed mothers have more than two early childhood education arrangements, they are more defiant than girls (Fuligni, Galinsky and Paris, 1995: 15).

Apart from inferences that could be drawn about the slower regulation of emotions by boys and higher levels of cortisol, little evidence suggests why the effects of early childhood education may be more negative for boys than for girls. Ahnert and Lamb (2003: 1045) suggest caregivers tend to develop more secure attachments to girls than to boys, which means boys cannot benefit as much from the support that might moderate the displays of aggression that are more problematic in boys. Considering the evidence, Crockenberg (2003: 1036) suggests parents should consider their child's personality and gender when considering early childhood education options. However, New Zealand research has failed to find any significant differences in the impacts of early childhood education on girls and boys (Horwood and Fergusson, 1999).

The EPPE Project found that young children who showed signs of special education needs dramatically improved their achievement simply by being in early childhood education. Children with no early childhood education experienced poorer attainment, lower social skills and poorer concentration. Children's progress increased relative to the staff's qualifications (Sylva et al., 2003).

## ***Early childhood education factors***

### *Quality factors*

International research is conclusive that early childhood education is generally beneficial as long as it is of good quality (for example, OECD, 2003: 138). In the New Zealand longitudinal study on child development, *Competent Children*, Wylie, Thompson and Lythe (2001: 62, 70) found a correlation between some process indicators of quality and higher outcomes. Interactions between staff and children and the responsiveness of staff to children rated highest, with other significant quality factors including staff providing guidance, staff using open-ended questions, children selecting activities, and a print-saturated environment. At age 12, correlations between positive outcomes for children and many of the process quality indicators

continued, with staff responsiveness, guiding children in activities, asking open-ended questions and joining children in their play remaining significant. These factors remained significant even after taking maternal qualification and family income into account, and the first three remained significant for mathematics after also controlling for the children's competency levels at age five. A print-saturated early childhood education environment was also significant for reading comprehension. These results suggest the benefits of high quality early childhood education relate more to ways of thinking and working than providing knowledge (Wylie et al., 2004).

Wylie, Thompson and Kerlake Hendricks (1996: xiv) concluded that 24 percent of sessions observed were of poor quality. Meade (1996: 7) suggested this finding was worrying, particularly since poor early childhood education could damage children. Wylie, Thompson and Lythe (2001: 254) found that centres with mostly children from middle-income families were more likely to rate highly on key aspects of quality. This suggests children from higher socio-economic backgrounds are better able to access high quality early childhood education.

### *Staff qualifications and capability*

The proportion of staff in early childhood education services holding teacher qualifications that would meet registration requirements (the Diploma of Teaching (ECE) or higher), varies considerably between centres and service-type. As shown in Table 6 below, in 2003, 6 percent of teacher-led early childhood education services employed no staff with qualifications (142 services). Overall, 32 percent of services' staff were all qualified, although this included only 7 percent of education and care services. Kindergartens employed high proportions of qualified staff.

**Table 6: Early childhood education services with all and no qualified teachers, 2003**

Service type	Services with all qualified teachers		Services with no qualified teachers		Total number of services
	No.	%	No.	%	
Education & care centres	109	7	120	7	1,673
Kindergartens	542	89	0	0	609
Homebased services	150	79	17	9	190
Casual education & care centres	13	31	5	12	42
<b>All services</b>	<b>814</b>	<b>32</b>	<b>142</b>	<b>6</b>	<b>2,514</b>

Source: Demographic and Statistical Analysis Unit, Ministry of Education, 2003.

### *Funding and cost*

Considerable evidence from United States studies indicates the cost of early childhood education has more of an impact on participation in work by lower income women (Smith et al., 2000: 81). The 1998 New Zealand Childcare Survey identified cost as the major barrier to accessing early childhood education (Department of Labour and NACEW, 1998). A study of Māori families by Te Puni Kōkiri also indicated that the cost of early childhood education was a major barrier for low-income families and middle-income families (\$25,000–\$50,000) (Clark and Garden, 1995: 79).

### *Strategic plan and Budget 2004*

In September 2002, the government launched the strategic plan for early childhood education, *Pathways to the Future: Nga Huarahi Arataki*. It has three central goals:

- increase participation in high quality early childhood education services
- improve the quality of early childhood education services
- promote collaborative relationships with families, whānau and communities (see Appendix C).

A key goal of the strategic plan is to improve quality in all early childhood education services. The strategic plan includes targets for teacher registration to achieve this goal in teacher-led services (education and care services and home-based care networks). The Ministry of Education has commissioned research to support quality improvements in parent-led early childhood education services (that is, kōhanga reo and playcentres).

The government has also targeted cost barriers to participation through additional funding. From 1 July 2007, children aged three and four who attend teacher-led community-based early childhood education services will be entitled to 20 hours of free education each week. In addition, from 1 April 2005, a new resourcing system will be specifically earmarked to deliver high quality services, particularly to meet the cost of lifting teacher qualifications and improving teacher-child ratios.

The 20 hours' free early childhood education for children aged three and four will help to break down the cost barrier from July 2007, but may result in insufficient services to meet increased demand. Increased subsidies from 2005 for low-income families will also help to break down the cost barrier (see Appendix A).

These funding increases reflect the government's more active involvement in early childhood education and will, after July 2007, significantly reduce the cost barrier to people accessing quality early childhood education, particularly people with children aged three and four.

## Relationship Between Family and Early Childhood Education Contexts

*Possible negative behavioural effects of early childhood education may be due to the complex changes in children's home and early childhood education experiences, including transitions between them.*

*In high quality early childhood education, staff accept and understand parental values and can integrate parents' knowledge and perspectives with educational expertise.*

In addition to the nature of the microsystems of family and early childhood education service, the relationships and movements between these microsystems also have influences on children.

Lamb (1999: 50) suggests an examination of the effects of early childhood education on children needs to consider the many individual factors influencing a child's life and the relationships between the two contexts of family and early childhood education.

Ahnert and Lamb (2003: 1044) suggest that evidence about the negative behavioural effects of early childhood education may not be due to the direct effects of non-maternal care, but may be due to the complex changes in children's home and early childhood education experiences, including transitions between them. They note that children's behaviour can deteriorate remarkably when parents come to pick them up from early childhood education. At this point, toddlers need sensitive support to re-equilibrate emotionally (Ahnert and Lamb, 2003: 1045). They propose that children's behaviour and degree of adaptation is largely a function of the balance between their stresses and supports, and the balance can be disrupted if parents cannot adequately assist children to manage their stress (Ahnert and Lamb, 2003: 1047).

The effectiveness of transitions is also determined by the relationships between parents and early childhood education staff. Since early childhood education is a supplement to care and learning in the home, it is important early childhood education services are responsive to parents' cultures, values and perspectives (Smith et al., 2000: 72–3). One key indicator of process quality is the nature of the staff-parent relationship. One aspect of high quality early childhood education is that the staff accept and understand parental values and can integrate parents' knowledge and perspectives with educational expertise (Smith et al., 2000: 72).

Since parents' values and early childhood education are unlikely to be perfectly congruent, women tend to find early childhood education arrangements where they have an agreed set of values with the caregivers (Smith et al., 2000: 91). This ensures a degree of congruence between family and early childhood education settings.

A further interesting finding from New Zealand research is that parents are poor judges of the quality of early childhood education (Callister and Podmore, 1995: 87).

Wylie, Thompson and Lythe (2001: 75) suggest more highly educated mothers are better at choosing centres that demonstrate high quality. They also agreed with international research that parents' satisfaction with early childhood education was not related to the indicators of quality used by researchers.

While this may demonstrate an inability of many parents to judge the quality of early childhood education by early childhood education standards, it may also reflect parents' different priorities and values. For example, parents value health and safety for infants the most and education is less of a priority (Smith et al., 2000: 92–3). This may be a problem, as research suggests high quality 'education' in the child's first years may be the most important factor in reducing negative effects of maternal employment and maximising positive effects of early childhood education.

A further consideration is the nature of 'quality'. As Lamb (1999: 50) points out, quality care must be defined in terms of the characteristics of particular societies and subgroups, so how quality is defined depends on the stakeholders' points of view. For example, in Māori communities, family responsibilities for caring for children include emotional and spiritual development, the transmission of culture and the development of identity (Durie, 1997: 9). The transmission of culture and development of identity are issues that must be considered when evaluating the impact of non-maternal care and early childhood education on children in New Zealand.

## Conclusion

*Maternal employment in itself has no significant negative or positive effects on children, although some international evidence suggests small negative effects for very young children. Early, extensive and poor quality non-maternal care combined with poor quality home care leads to negative effects.*

*The most important influences on children's outcomes are:*

- *the quality of interactions between the child and key adults, be it at home or in early childhood education*
- *children's participation in some quality early childhood education.*

*Key factors positively affecting children's development include:*

- *high quality parental care (interactions) including parents' psychological well-being*
- *high quality early childhood education (particularly staff-child interactions)*
- *more paternal care*
- *higher family incomes for children living in extreme poverty.*

Investigation into the influences on children's development shows the fundamental factor is the nature of children's experiences in their primary life contexts, including the relationships between those contexts and wider socio-cultural contexts. The most influential factor is the nature of interactions with parents and, in the early childhood education setting, with early childhood educators.

With regard to the impact of maternal employment, the direction of international research suggests maternal employment in itself has no significant negative or positive effects on children, although small negative cognitive and behavioural effects of extensive maternal employment may occur in the child's first year. These possible negative effects are linked to the quality of the early childhood education, so high quality generally removes the negative effects and may increase positive effects in that first year. Any negative effects of maternal employment are negligible beyond the child's first year and must be seen in relation to the numerous influences in the different contexts of a child's life.

The negative effects indicated by international research must be seen in their socio-cultural contexts, which limit the application of that research to New Zealand. The Competent Children Project and Christchurch longitudinal study suggest maternal employment did not have negative effects for New Zealand children, although they do not specifically examine the early years. The Competent Children Project also found that early and extensive early childhood education in New Zealand did not lower cognitive outcomes for children and seemed to improve them. This suggests that if there are any negative effects of maternal employment and/or early childhood education in the first year for New Zealand children, they are probably offset by later high quality early childhood education experiences. This issue needs examination.

With regard to early childhood education, high quality is consistently associated with better cognitive outcomes for children in New Zealand and internationally. Quality is largely determined by the quality of interactions between staff and children. Staff qualifications and ratios are strongly linked to high quality, but are not deterministic.

Research suggests slight negative behavioural effects of early childhood education, but these are reduced in high quality services. International research is conclusive that early childhood education is beneficial from age three, and probably much earlier, as long as it is of good quality. New Zealand research indicates that early childhood education is beneficial at all ages, and that the more extensive the early childhood education experience, the better the mathematics and reading comprehension outcomes for children at age 12.

Research is also conclusive that quality early childhood education at any age improves outcomes for disadvantaged children. Growing evidence suggests these positive effects can be lasting, as shown by the longitudinal studies of Head Start. However, in New Zealand, it may be that more disadvantaged children are not participating for sufficient hours and/or in sufficiently high quality early childhood education to gain such benefits. It is hoped that access to free early childhood education for children aged three and four in community-based services will improve participation from 2007.

One area not covered by the research investigated in this review is the role of early childhood education in transmitting culture and language, and the impact of that on children who are not from the dominant culture. This has implications for the design and evaluation of early childhood programmes.

Another area that needs further work is the nature and effect of whānau care arrangements in New Zealand. The demographic characteristics of New Zealand households and families (for example, the high proportion of relatives living together in Māori, Pacific and Asian families) mean extended family care cannot really be equated with the informal care arrangements in the United Kingdom research that had the poorest outcomes for babies and infants. The EPPE Project suggested it was the quality of interactions that was most important in children's achievement, rather than the setting of the interactions. Further research is needed into the role of whānau and other extended families in providing home care for young children and what is needed to support such family arrangements. The Te Hoe Nuku Roa research may provide data and access to appropriate cohorts.

While maternal employment and early childhood education are two separate influencing factors, it must be remembered it is the combination of factors in the various contexts of children's lives that have an impact on their development, not any one factor alone. For example, it is when early, extensive and poor quality non-maternal care is combined with poor quality home care that negative effects can be seen.

In the end it is not the type of family, nature of paid work or type of early childhood education that has the most influence on a child's development. What seems to count the most is the nature of interactions between a child and key adults in the

primary contexts or microsystems of a child's life, and the mix of these contexts. Beyond that lie the secondary influences on the child's microsystems, such as the effect of maternal employment on the well-being of mothers and family income. Beyond that again lies the wider system of policies and values.

Smith (1996: 60) sums up the complexity of the effects of the two major contexts of children's lives in the conclusion to her study of infant care in New Zealand:

Happy, healthy children in low stress families and centres have a high potential for contributing positively to New Zealand society. The consequences of not providing such favourable environments for children are likely to be negative, not only for the individual children and families, but for the wider society as schools and social agencies have to deal with learning and social difficulties that children develop as a result of inadequate care.

## Appendix A: New Childcare Subsidy Rates

### ***From 4 October 2004***

Families on higher incomes will be eligible for the Childcare Subsidy and able to earn more before their subsidy is reduced. Income eligibility thresholds will be adjusted regularly in line with consumer price index increases.

Subsidy rates will increase significantly. The rate of the Out of School Care and Recreation (OSCAR) Subsidy will increase to match the Childcare Subsidy rate, and both will increase by 10 percent.

### ***From 3 October 2005***

The rates for the Childcare Subsidy and OSCAR Subsidy will increase by a further 10 percent from 3 October 2005. Table C1 shows the new income levels and rates for the Childcare Subsidy and the OSCAR Subsidy (jointly referred to as 'childcare assistance').

**Table C1: Changes in childcare assistance rates from 4 October 2004 and 3 October 2005**

<b>If you have one child...</b>			
And your weekly income before tax is less than	\$770	\$850	\$930
<b>the hourly rate of childcare assistance per child increases to</b>			
from 4 October 2004	\$2.84	\$1.98	\$1.10
from 3 October 2005	\$3.12	\$2.18	\$1.21
<b>If you have two children</b>			
And your weekly income before tax is less than	\$950	\$1,040	\$1,130
<b>the hourly rate of childcare assistance per child increases to</b>			
from 4 October 2004	\$2.84	\$1.98	\$1.10
from 3 October 2005	\$3.12	\$2.18	\$1.21
<b>If you have three or more children</b>			
And your weekly income before tax is less than	\$1,110	\$1,220	\$1,330
<b>the hourly rate of childcare assistance per child increases to</b>			
from 4 October 2004	\$2.84	\$1.98	\$1.10
from 3 October 2005	\$3.12	\$2.18	\$1.21

Source: Ministry of Social Development (2004a).

### ***Rates***

The amount of help families can get depends on the number of children and amount of income. This will be paid to childcare providers and will reduce the amount families have to pay them.

## Appendix B: Education Review Office Report on Early Childhood Services

In its 2001 evaluation report, *Early Childhood Services*, the Education Review Office (ERO) reported that the quality of education provided by centres varied greatly. Overall, 84 percent of the centres and umbrella bodies had one or more ERO-required actions to meet quality and regulatory requirements.

The most common causes of ERO-required action were inadequate:

- assessment and planning for each child's learning and development
- internal review processes
- personnel policies to promote quality practices.

ERO found 204 of the 615 centres and umbrella bodies (33 percent) failed the requirement that:

Educators should demonstrate knowledge and understanding of the learning and development of each child, identify learning goals for individual children, and use this information as a basis for planning, evaluating and improving curriculum programmes.

ERO also found 66 centres or umbrella bodies (11 percent) needed to improve planning, implementation and evaluation of a curriculum in which:

Children's play is valued as meaningful learning and the importance of spontaneous play is recognised; children gain confidence in and control of their bodies; children learn strategies for active exploration, thinking and reasoning; and children develop working theories for making sense of the natural, social, physical and material worlds.

More generally, 95 centres or umbrella bodies (15 percent) did not provide 'developmentally appropriate programmes'.

## Appendix C: Strategic Plan for Early Childhood Education

In September 2002, the government launched its strategic plan for early childhood education, *Pathways to the Future: Nga Huarahi Arataki*. It has three goals:

- Increase participation in high quality early childhood education services by:
  - focusing on communities where participation is low, particularly Māori, Pacific, low socio-economic and rural communities
  - being driven by the needs of those individual communities
  - increasing the government's role in facilitating access to quality early childhood education services
  - supporting early childhood education services to be more responsive to the needs of children, parents, families and whānau.
- Improve the quality of early childhood education services by:
  - implementing *Te Whāriki* (the early childhood curriculum) effectively
  - ensuring teachers, ratios and group size support quality
  - providing for quality interactions between teachers or parents and whānau and children
  - establishing and reflecting on quality practices in teaching and learning.
- Promote collaborative relationships by improving children's development and educational achievement from birth to age eight by forming strong links between early childhood education services, parental support and development, schools, and health and social services.

The plan includes specific strategies for building an early childhood education sector that is responsive to Māori and Pacific peoples' needs.

Specific goals for Māori are to:

- enhance the relationship between the Crown and Māori
- improve the appropriateness and effectiveness of early childhood education services to Māori
- increase the participation of Māori children and their whānau in early childhood education.

Some of the biggest shifts in direction will be:

- new funding and regulatory systems to support diverse early childhood education services to achieve high quality early childhood education
- better support for community-based early childhood education services
- the introduction of professional registration requirements for teachers in teacher-led early childhood education services, such as already apply in the school sector and kindergartens
- better co-operation and collaboration between early childhood education services, parental support and development; and education, health and social services to empower parents and whānau to be involved in their children's early learning
- greater government involvement in early childhood education, focusing on communities where participation in quality early childhood education is low.

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