

Effects of the Amount of Time in Child Care on Children's Cognitive and Social Development

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Declaration

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Glossary of Abbreviations

ABS	Australian Bureau of Statistics
ADRC	Accreditation Decision Review Committee
AFDC	Aid to Family with Dependent Children
APHA & AAP	American Public Health Association's and American Academy of Paediatrics
AUSTLII	Australasian Legal Information Institute
BERR	Department for Business, Enterprise and Regulatory Reform
CCB	Child Care Benefits
CCC	Child Care Centres
CCDF	Child Care Development Fund
CCTR	Child Care Tax Rebate
CDCT	Child and Dependent Care Tax Credit
CTC	Child Tax Credit
DECS	Department of Education and Children Services
DPW	Numbers of day attend CCC in a week
DoCS	Department of Community Services
EITC	Earned Income Tax Credit
EPPE	The Effective Provision of Pre-School Education Project
FaCSIA	The Department of Families, Community Services and Indigenous Affairs
FAO	Family Assistance Office
FDC	Family Day Care
FIDCR	Federal Interagency Day Care Requirements
FMLA	Family Medical Leave Act
HIMIE	Her Majesty's Inspectorate of Education
HPD	Numbers of hours spend in CCC in a day
HPW	Numbers of hours spend in CCC in a week
IPSP	Inclusion and Professional Support Program
ILO	International Labour Organisation
JETCCFA	Job Education and Training Child Care Fee Assistance
NAEYC	National Association for the Education of Young Children
NCAC	National Childcare Accreditation Council
NM	Numbers of Month have been enrolled in CCC
NNEB	Nursery Nurse Examination Board
OECD	Organization for Economic Co-operation and Development
OFSTED	Office for Standard in Education, Children's Services and Skills
OPSI	Office of Public Sector Information
ORCE	Observational Record of the Caregiving Environment
PRWORA	Personal Responsibility and Work Opportunity Reconciliation Act
QIAS	Quality Improvement and Accreditation System
SSBG	Social Service Block Grant
TANF	Temporary Assistance for Needy Families
TDI	Temporary Disability Insurance
TH	Total numbers of hours spend in CCC

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Dedication

To my angels

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To my little angels, Alya (10 years old), Helmy (8 years old) and Harris (3 years old) who have inspired me to study children, brilliant little creatures. May this thesis become the beginning of my journey to assist parents in understanding children's development.

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Abstract

This thesis has four main goals: (1) to examine the association between different measures of time in childcare on children's cognitive and social development; (2) to investigate the influence of child-care-related variables (i.e., structural and process features of quality child care, caregivers' mental health status and job satisfaction) on child developmental outcomes; (3) to determine whether child care predicts developmental outcomes after controlling for the effects of family-background variables (e.g., family social environment, parental discipline practices and parental mental health status); and (4) to examine the moderating effect of family and other predictor variables on the relationship between the amount of time spent in child care and its effect on children's cognitive and social development. To achieve these goals, data were collected from 147 children between 3-4 years of age in Study I and 89 children aged 4-5 years in follow-up studies. These children were attending nationally accredited child care centres in South Australia, but in areas that differed socio-economically.

The first finding was that different measures of time in childcare were not equally related to child developmental outcomes. The number of day(s) in a week, amount of hour(s) in a day and in a week spent in childcare was negatively related to children's social behaviour, whereas the number of months children had spent in childcare was positively related to social development scores. A second finding was that the structural feature of childcare (group size) was significantly related to child developmental outcomes. A smaller group size (10-20 children) was found to have a greater significant positive effect than bigger group size (21-30 children) on child psychosocial behaviour. Another quality feature, a harsh style of caregiver interaction was associated with high scores in child conduct problems measure.

A third finding was that higher levels of family conflict were associated with higher scores on the SDQ and ASBI subscales while higher levels of expressiveness in the family were associated with higher scores on the ASBI subscales. Further, higher scores on a measure of dysfunctional parental discipline practices were associated with lower scores in social competence measures in children.

Fourth, the nature of caregiver interactions with children (in particular, a harsher style of interaction) was found to moderate the effect of time spent in child care and its consequent impact on children's developmental outcomes. Specifically, it was found that: (1) children who spent long hours in daily care had higher caregiver assessed scores on the SDQ if the caregiver practised a harsher style of interaction; and (2) children who attended childcare many hours per week were rated by their caregivers as having lower prosocial scores if the child attended a centre where caregivers interacted more harshly with children,

Other results obtained from the analysis of interaction effects showed that family-related variables (i.e., family conflict, expressiveness, dysfunctional parenting discipline and lax parenting style) moderated the effect of time spent in child care on children's developmental outcomes. In particular, it was found that: (1) children who attended many days per week and who came from family environments characterised by higher levels of conflict were given lower ratings for prosocial behaviour; (2) children who spent more hours of child care in a week were rated low in peer problems measure when the family reported high social expressiveness; (3) children who spent more hours in a week in childcare were given higher ratings for prosocial behaviours if the children

had been exposed to more dysfunctional parenting discipline practises at home (i.e., total score and lax parenting style).

These results are discussed in relation to studies in other countries on the effects that child care attendance has on child developmental outcomes. Consistent with findings in Sweden, the United Kingdom and the United States of America: (1) attending child care more hours in a week seem to have a negative effect on a child's social developmental outcomes even after child care and family characteristics are taken into account; (2) family characteristics remain a significant predictor of child development even when children spend most of their day time in child care; and (3) structural and process features of child care had significant predictive effects on children's development. In contrast to the findings from studies in these countries, this research showed that: (1) high numbers of months in child care positively affects child social development; (2) family variables (i.e., family conflict and dysfunctional parental discipline strategies) have both direct and indirect influences on child developmental outcomes; and (3) the effects of the amount of time in childcare vary as a function of caregiver interaction as well as family background variables. Further research is needed to understand all the mechanisms responsible for these convergent and divergent outcomes.

Chapter One: Overview and Introduction

1.1. Introduction

The number of employed women has increased worldwide. There were 59,873,000 women employed in the USA in 1997 and this increased to 66,925,000 in 2006 (ILO, 2007). The numbers of employed women also increased in the United Kingdom (12,022, 000 in 1997 to 13,104,000 in 2005) and Sweden (1,880,000 in 1997 to 2,068,000 in 2006) (ILO, 2007). Similarly, the numbers of employed women have also increased in Australia (3,633,000 in 1997 to 4,572,000 in 2006) (ILO, 2007). However, the participation in employment of Australian women with children is partly a function of the ages of their children. For example, recent data indicate that only 45% of mothers with children under 5 years of age work in comparison with 64% of mothers with children who are 5-9 years of age (ABS, 2006a). Similarly, Australian women's involvement in full-time or part-time work is also affected by the ages of their children. For example, only 14% of women with children under 5 years of age work full-time, whereas 31% work part-time (ABS, 2006b).

It appears that many Australian women prefer to take personal care of their pre-school children. However, government support in the form of family assistance such as family allowances and single parent payments for Australian women staying at home has probably contributed to this trend. The fact that more Australian women work than a decade ago is possibly the result of the increased accessibility of women to childcare services and their greater ability to monitor the quality of care provided (NCAC, 2006a). The importance of childcare to children is not only the concern of parents; it has

also attracted the attention of many researchers. Questions have been raised about whether separating a child from their mother for a long period everyday (i.e., children attending child care when mothers are working) can lead to negative developmental outcomes such as insecure attachment during infancy (Belsky & Rovine, 1988), behavioural problems at preschool age (NICHD Early Child Care Research Network, 2002a) and low academic adjustment at school age (Harrison & Ungerer, 2000).

Research relating to the effects of childcare has varied in its emphasis through the decades (Scarr & Eisenberg, 1993). For example, researchers in the 1970s explored the effect of maternal care versus non-maternal care, and the basic research question during this era was: “is non-maternal care harmful to children?” (Caldwell, Wright, Honig, & Tannenbaum, 1970; Rubenstein, Pederson, & Yarrow, 1977). Studies in the 1980s investigated the effect of types and characteristics of child care. They explored research issues such as: “what is the best type of child care for children?” and “what are the structural features of child care that influence child development?” (Clark-Stewart, 1989; Howes, 1983). Research from the 1990s onwards has looked more closely at the effect of distal and proximal influences on the child. Contemporary research has also investigated the longitudinal effect of child care on children’s development, using data drawn from large sample groups (Bowes et al., 2003; NICHD Early Child Care Research Network, 1997a, 1997c, 1998b, 2002a, 2005a).

Despite many years of extensive research that has examined the effect of childcare on children’s development, the general conclusion is that a clear or direct relationship is difficult to detect because of the complexity interplay of other contextual factors, including the characteristics of families and the children themselves (Broberg, Hwang, Lamb, & Bookstein, 1990; NICHD Early Child Care Research Network, 1997c, 2003c). As a result, the results relating to this issue have varied. Thus, while many

studies have found that child care has a positive effect (Andersson, 1989, 1992; Harrison & Ungerer, 1997, 2000; McCartney, 1984), other studies have indicated that child care can be problematic (Baydar & Brooks-Gunn, 1991; Belsky & Rovine, 1988) or have little effect at all (Ackerman-Ross & Khana, 1989) on children's development. As a general rule, the positive effects of child care are more likely to have been reported by studies that have investigated the quality of childcare (e.g., in terms of structural features of processes, including: low numbers of children per adult, small group sizes, sensitive care-giving, and high score of overall classroom quality as indicated by such measures as the ECERS-R) (Burchinal, Cyer, Clifford, & Howes, 2002; Harrison & Ungerer, 2005). By contrast, negative conclusions have generally arisen in studies that have investigated the length of time children have spent in childcare (Baydar & Brooks-Gunn, 1991; Belsky & Rovine, 1988).

1.2. Research Objectives

As discussed in the above paragraph, the effect of child care on child developmental outcomes is likely to vary as a function of a number of variables including the quantity of care provided, the characteristics of the child and their family backgrounds. Studies on the effect of child care on child development have suggested that the amount of time in child care and the structural and process features of child care are the most significant predictors of child developmental outcomes (Andersson, 1992; Burchinal et al., 2002; Harrison & Ungerer, 1997, 2000; NICHD Early Child Care Research Network, 2003d). Studies that examined the extensive amount of time spent in the child care centre are likely to show that it is damaging in the long-term. However, more detailed and specific investigations indicated that this outcome varies according to the age of the child, their family characteristics, and the types of development under consideration (i.e., social or cognitive) (Baydar & Brooks-Gunn, 1991; Belsky &

Rovine, 1988; Harrison & Ungerer, 2000; NICHD Early Child Care Research Network, 1998a, 2003c).

Studies have shown that the number of hours in a week children attend childcare has a more significantly negative effect on social rather than cognitive development. Moreover, longitudinal studies have indicated that the negative effect of extensive child care becomes more evident or reappear when children are close to or reach school age (Broberg, Wessels, Lamb, & Hwang 1997; Harrison & Ungerer, 2000; NICHD Early Child Care Research Network, 2003c). The majority of these studies have focused on the effect of the average number of hours per week or part-time or full-time attendance on children's development (Harrison & Ungerer, 1997, 2000; NICHD Early Child Care Research Network, 1997c, 1999, 2000a; Schwartz, 1983). However, specific measures of time such as the numbers of days in attending a child care centre (CCC) in a week (DPW), the numbers of hours spent in CCC during the day (HPD), the numbers of hours spent in CCC per week (HPW), the numbers of months enrolled in a CCC (NM) and total numbers of hours (TH) spent in a CCC, have not been studied extensively. This issue is important to study, especially in Australia, because the availability of many different types of childcare. If research can identify the specific measure of time (DPW, HPW, HPD, NM and TH) that children spend in the child care centre and its significance for children's cognitive and social development, it may provide parents with new information regarding the most appropriate amount of time that their children need to spend in a childcare centre.

As mentioned, research has also have examined a variety of features relating to the quality of childcare received and the impact that this can have on children's language, cognitive and social development. The elements of quality that have been

investigated include overall classroom quality (i.e., cover space and furnishings in classroom, children's personal care routines, language-reasoning and activities, social interaction, program structure and parents and staff relationship) (Burchinal, Roberts, Nabors, & Bryant, 1996), the number of children per adult and group size (Howes, Phillips, & Whitebook, 1992), caregivers' qualifications and training (Burchinal et al., 2000a) and child care worker-child interactions (Burchinal & Cryer, 2003).

These quality features are usually categorised into structural and process features. Process (e.g., overall classroom quality and caregivers-child interaction) refer to features that affect children's development directly (McCartney, 1984), whereas structural features (e.g., ratio, group size and caregivers' qualifications) are thought to influence children indirectly (Howes et al., 1992). Research indicates that structural features significantly affect the quality of caregiving and this, in turn, influences children's development (Howes et al., 1992). Therefore, studies have been conducted to investigate the minimum requirements for structural quality that affect the quality of caregiving (Howes, 1983; Howes et al., 1992). For example, the existing literature indicates that the minimum requirement of the number of children per adult and group size is lower for younger (0-2 years old) than older children (3 -5/6 years old) (Howes et al., 1992; Whitebook, Howes, & Phillips, 1990). It is also considered appropriate that caregivers' should have accredited qualifications in Early Childhood Education in order to provide developmentally appropriate activities (Siraj-Blatchford, Sylva, Muttock, Gilden, & Bell, 2002). However, despite the importance of these factors, relatively little investigation of the importance of these process and structural factors has been undertaken in Australia.

Accordingly, more data is needed on whether the childcare features (as indicated earlier) are equally prevalent in different childcare centres across Australia. Issues of this nature are important because they provide important insights into whether the minimum structural requirements for childcare established by each State and now formally mandated by the Federal Government are being provided. These considerations also have implications for the extent to which different childcare centres are likely to be providing a service that is equally beneficial to children's psychosocial wellbeing and development.

In addition to the issue of childcare quality, another important issue is the effect of caregivers' characteristics (i.e., mental health status and job satisfaction) on children's developmental outcomes. Although these issues have not been examined extensively in previous studies, an effort to explore their influence on children's development is important because these traits may influence children's development indirectly.

Research on the effect of child care on child development has also indicated that family characteristics may also be significantly related to the developmental outcomes arising from children's time in childcare (Burchinal, Peisner-Feinberg, Bryant, & Clifford, 2000b; NICHD Early Child Care Research Network, 1998b, 2005a). Some studies have proposed a direct relation between family characteristics and developmental outcomes (Howes & Olenick, 1986) and that this relationship still exists even when children received quality child care (Broberg et al., 1997). Others, on the other hand, have suggested that family factors moderate the relationship between child care and children's development (Votruba-Drzal, Coley, & Chase-Landsale, 2004).

For the most part, these previous research studies examined the effect of family variables when the quality child care was diverse and where the social welfare system provided limited support for childcare. In these studies, many of the analyses related to broad socio-demographic factors such as a family's economic and financial status, marital status or ethnic background. However, the effects of other more subtle family variables such as family social environment, parental discipline strategies and parental mental health status which tends to be less variable between families in westernised countries, have not been as thoroughly researched. These factors need to be taken into account because parents may play an important role in influencing how prepared for, or how children respond to, the childcare environment.

In addition to the individual clusters of factors identified so far (time spent in childcare, the structural and process characteristics of the care centres themselves and family factors), studies have also examined the interaction between different types of factor. For example, studies have examined the interaction between child care features and other factors such as: maternal sensitivity and responsiveness (NICHD Early Child Care Research Network, 2005n); overall classroom quality (i.e., measured by ECERS); ethnic status and child language development (Burchinal et al., 2000b) and maternal educational background (Peisner-Feinberg et al., 2001).

1.3. Research Gaps, Hypotheses and Proposed Analyses

Based on the above summary, the aim of this research was to examine four major gaps or deficits in existing research relating to the effect of childcare on children's development.

(a) Time Spent in Care

The first aim was to consider whether the strength of the relationship between time spent in care and children's cognitive and social development differs depending upon the type of measure selected. As discussed above, extensive research has been conducted on the effect of time in child care on children's developmental outcomes. The literature on this topic generally suggests that more hours spent in the child care is detrimental to children's social development (Belsky & Rovine, 1988; Harrison & Ungerer, 2000; NICHD Early Child Care Research Network, 2005h) but conversely, many months attending child care has a positive effect on child development (Broberg et al., 1990; Sylva et al., 2003). Accordingly, it was hypothesized in this research that the varying measures of time in child care impact differently on child development. Consistent with the literature, this research predicted that spending more hours in childcare per week would have a negative effect on child developmental outcomes, whereas a greater number of months in childcare should have a positive effect on children's development. Included in the investigation of these hypotheses was an examination of whether different measures of time spent in child-care had a differential effect on children's cognitive as opposed to social development.

(b) The Characteristics of Child-Care Centres

Following on the discussion of structural and process factors described above, the study was also designed to provide useful descriptive information concerning the quality of care provided in different centres in South Australia. The association between different measures of quality (e.g., overall classroom quality, children per caregivers, group size, caregivers' training and education, and caregivers-child interactions) and children's developmental outcomes were examined. Based upon studies that have emphasised the importance of process and structural features on child development

(Burchinal et al., 2002; Burchinal et al., 1996; Peisner-Feinberg et al., 2001), it was hypothesised that these different child care features would be significantly related to children's cognitive and social development scores. In particular, it was expected that high overall classroom quality (i.e., measured by ECERS-R), small group size, and sensitive caregivers-child interactions would be associated with more positive developmental outcomes. Other childcare-related variables such as caregivers' mental distress and job satisfaction were also examined and expected to be significantly related to developmental outcomes.

(c) Family-Background Variables

This study also considered whether childcare affects children's developmental outcomes after controlling for the influence of family background variables (e.g., family social environment, disciplinary styles and parental psychological distress). Previous research has found that families can have a significant influence on children's development even when children spend most of their time in child care (NICHD Early Child Care Research Network, 1998b). For example, maternal education has been found to significantly influence children's cognitive and language development (Melhuish, Lloyd, Martin, & Mooney, 1990b) and maternal sensitivity has been found to be related to secure attachment behaviour (NICHD Early Child Care Research Network, 1997c, 2005n). Consequently, it was hypothesised that these family variables would be related to developmental outcomes. In particular, it was predicted that a more functional family social environment, strategic parental discipline practices and low parental distress symptoms would be associated with better developmental outcomes irrespective of how much time children spent in childcare.

(d) Interactions

A final part of this research project and its associated analyses examined the importance of the interaction between the variables described above. In particular, this study examined the moderating effect of the quality of child care and family variables on the relationship between the amount of time spent in childcare and children's cognitive and social development. It was hypothesised that the effects of different measures of time in child care on child developmental outcomes would be influenced by structural and process features, caregivers' mental health status and job satisfaction and family features (family social environment, parental discipline style strategies and parental mental health). Given that relatively few studies have examined many of these factors in great detail, these analyses were considered more exploratory than confirmatory.

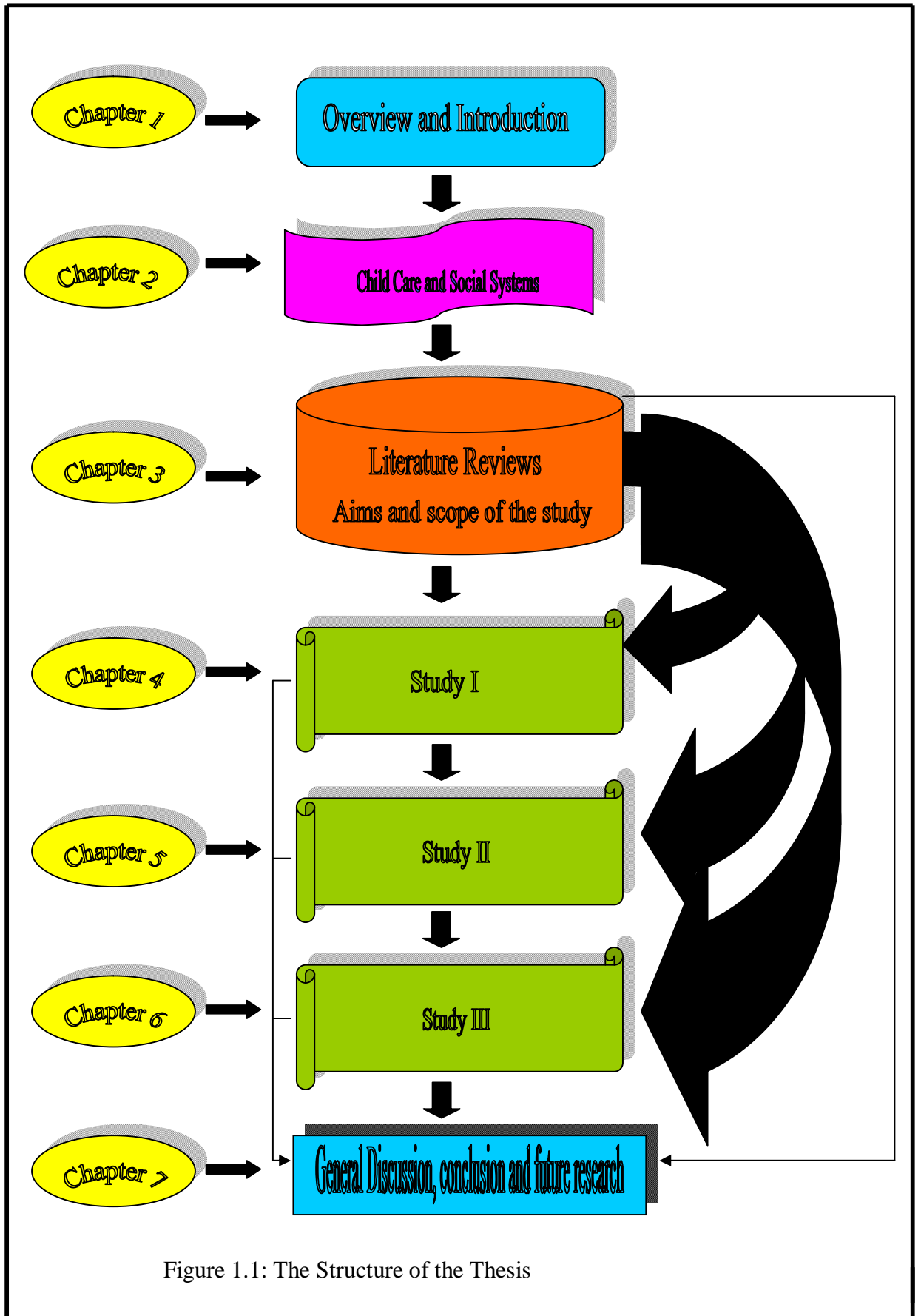
1.4. Thesis Structure

The thesis comprises seven chapters (see Figure 1.1). Chapter 2 describes the child care and social systems in Australia and the United States of America, United Kingdom and Sweden. Chapter 3 reviews the relevant and related literature for this research and is structured into four parts or sections. Part I describes the effect of quantity of child care on children's development. Part II discusses the impact of child care features on child cognitive and social development, whereas Part III focuses on the role of family in influencing the child development. Part IV presents the research theoretical framework and conclusion of Chapter 3.

Three empirical studies on the relationship between child care and child development are presented in the next three chapters (i.e., Chapter 4 (Study I), Chapter 5 (Study II), and Chapter 6 (Study III)). Study I examines the effect of different

measures of amount of time in child care, family social climate and overall classroom quality on children's developmental outcomes. Study II looks into the effect of parental discipline strategies and the structural features of child care in South Australia on child developmental outcomes. Study III investigates the effects of other new family and child care-related variables (i.e., parents and caregivers' mental health status, caregivers-child interactions, and caregivers' job satisfaction,) on child development. All studies also examine the interaction effects of different amounts of time in child care and family and child care-related variables on child cognitive and social development.

Chapter 7 concludes this research by synthesizing the results from all three studies in order to consider the implication of this work for child care centres, caregivers and families. Chapter 7 also describes the limitations of the study and recommendations for future research in child care, particularly in South Australia.



Chapter Two: Child Care and Social Welfare Systems

2.1 Introduction

In Chapter One, it was noted that the numbers of employed women in Sweden, America, Britain and Australia had increased substantially since 1997. For working women in these countries and in others, statutory parental leave, child care provisions and child care systems have influence on children's experience of child care. Parents need to deal with these issues in order to balance their jobs and families.

Paid parental leave is ideal for working families with newborn/infants because mothers (as primary caregiver) can take a break from work to look after their child (ren) and still be paid. However, government policy on parental leave varies worldwide with respect to the duration of leave and payment they receive. Parents who have unpaid parental leave are more likely to come back to work earlier than parents who have paid parental leave. As parents (i.e., mothers) go back to work, they will require some kind of child care. Parents differ with regards to the child care service they choose. The variation may be associated with reasons such as: (1) the availability and accessibility of the child care arrangements; (2) affordability of the child care fees; (3) the features of child care that distinguish between child care arrangements; and (4) family factors (e.g., culture and ethnicity, education, etc.). The first three reasons are closely associated with the child care systems that are available socially. The child care system ranges from a well structured national child care system to a poorly structured one. A society that has a comprehensive national child care system (i.e., provides adequate child care arrangements; generous funding that reduces the burden of child care fees on parents;

and monitors child care provisions) enables parents to assess the kind of child care demanded. Information gathered suggests that statutory parental leave may influence children's age of entry into child care. In addition, the structured and unstructured child care systems that are available may influence the type, quantity and quality of child care that children experience. Further discussion on the association between parental leave, child care system and child's experience of child care will be presented later in this chapter.

Since statutory parental leave and child care system vary between countries, this chapter attempts to describe these systems in developed countries such as Sweden, the United States, United Kingdom, and Australia. Each country has a different policy on parental leave and government plays a different role in the child care system. The research literature on the effects of child care emanates largely from these countries, so it is important to understand the similarities and differences in these countries regarding parental leave and child care. This chapter is divided into three parts. Part I describes statutory parental leave, Part II explains the child care system and Part III discusses the statutory parental leave, the child care system and children's experience of child care.

2.2 Part I: Parental leave

In many countries, men and women can take leave to look after their newborn. However, each country differs with respect to the length of time for leave, payment received during leave, and availability of shared parental leave.

2.2.1 Sweden

Employees in Sweden can have 24 months parental leave. They receive the first 18 months with payments at 80% of their prior earnings, 3 months flat rate and another 3 months unpaid (Waldfoegel, 2006). Sweden also encourages shared parental leave. For

the father, it is compulsory to take a minimum of 2 months leave from work to share responsibilities of the new baby. If fathers do not use the leave, they will lose it.

2.2.2 United States of America

Employees in the United States are awarded 12 weeks of unpaid leave with no shared parental leave (U.S. Census Bureau, 2005). Parental leave is covered under the Family Medical Leave Act of 1993 (FMLA). According to the FMLA, employees must work for their employers for 12 months or 1250 hours in the last 12 months and be employed in a firm that has at least 50 workers in order to qualify for parental leave (U.S. Department of Labor, 2007). Due to these prerequisites, a lot of Americans do not qualify. Furthermore, the 12 weeks are unpaid and therefore, many who are eligible refuse to take it (Cantor et al., 2001). In addition to the FMLA 1993, a mother who gives birth is considered temporarily unable to work. So she is entitled to temporary disability insurance –TDI (Waldfoegel, 2006). With respect to this TDI, a mother is eligible for up to eight weeks leave with some pay. However, this policy is not practised in all American states (Phillips, 1991; Waldfoegel, 2006).

2.2.3 United Kingdom

The United Kingdom has awarded paid maternity leave to women in the workforce who decide to raise a family. Since 2004, the period of maternity leave in the United Kingdom has been six months paid leave. The paid leave is 90% of previous income covering the first six weeks only and the balance for the next 20 weeks is a fixed payment (i.e., £102.80 per week) (BERR, 2008a; OPSI, 2008). For this reason (i.e., pay/income), a majority of employed mothers with newborn children are likely to return to the workforce quite quickly (Sylva, Stein, Leach, Barnes, & Malmberg, 2007). In the “Ten years strategy for child care choice” (under consideration when this research

was conducted), the British Labour government planned to increase paid maternity leave to 39 weeks by April 2007 and then to 52 weeks by the April 2010 (BERR, 2008b).

2.2.4 Australia

Presently, the statutory unpaid parental leave for employees in Australia is 12 months (Workplace Relations Act, 1996). The father and mother can take turns in taking time off from work before their child turns one. There is no fixed ratio for this shared parental leave (OECD, 2001). However, with a new reformation in parental leave scheme, Australian Government will introduce a comprehensive Paid Parental Leave (PPL) scheme beginning on 1 January 2011 (Australian Government, 2009). In the new PPL scheme, parents will receive a taxable payment of AUD543.78 a week for a maximum period of 18 weeks through their employer. To be eligible for the PPL scheme, primary carer must be in the paid work and have been engaged in work continuously for at least 10 of the 13 months prior to the expected birth or adoption of the child and undertaken at least 330 hours of paid work in the 10 month period. In a case if a primary carer (i.e., mother) returns to work before she has received all her PPL entitlement, the unused part of her PPL could be transfer to another caregiver (i.e., father) if he is eligible (according to criteria mentioned earlier) (Australian Government, 2009).

Any employee that is not eligible for paid parental leave, they are still granted with unpaid parental leave and will continue to receive, if eligible, the current forms of family assistance (including the Baby Bonus). If employers cannot provide any leave to the employees, they need to provide a valid reason as employees have a right to

complain to the Department of Industrial Relations if their employers fail to give valid reasons for not being able to provide unpaid parental leave.

2.3 Part II: Child Care System

Parents are the primary caregivers of their own children. However, society also plays an important role in helping parents take care of their children. One of the most obvious situations where society plays this role is through providing child care for children of employed parents. As indicated earlier in this chapter, countries around the world vary with regards to the system of child care that they develop. Therefore, similar to the section above, this section describes the child care systems in Sweden, the United States, United Kingdom and Australia.

2.3.1 The child care system in Sweden

In Sweden, the child care system has been integrated with Early Childhood Education since 1998. Early Childhood Education and Care (ECEC) is the responsibility of the Ministry of Education and Science, which is itself responsible for the ECEC central policy, goals, guidelines and financial framework (OECD, 2001). The National Agency of Education or *Skolverket* then administers the educational system at a primary, secondary and university level and also governs and monitors the quality of the child care system. However, local municipalities actually run most child care programs (i.e., child care centres/pre-school and family day care), establish the pre-school activities that are based on the national curriculum, control child care financial matters (i.e., fees, expenses and funding) and submit annual reports to the National Agency of Education. The government provides funds to facilitate both public and private child care in order to provide quality child care services. Forms of child care provision include child care centre and family day care, while child care arrangements for children

of non-working or non-student parents consist of open pre-schools (Skolverket, 2005a). The latter will not be discussed further here.

Children have different experiences in the public child care centres in relation to the age of entry, time spent in child care, fees schedule, number of children per adult and group size. Swedish public child care centres accept children from 1 year of age until school age. Children start pre-school at different ages and attend for varying numbers of hours per week (Skolverket, 2005b). The opening hours of the pre-school centres also vary as they accommodate different parental working hours (Skolverket, 2005a). Parents are required to pay child care fees and the rate varies between municipalities (Ministry of Education and Science, 2000). Similarly, as the fees are linked to the family's income and the child's attendance, parents also pay variable fees (Skolverket, 2005a). In order to prevent the charging of fees that are too high, the Swedish government in 2002 agreed to allocate a special grant to municipalities that set their maximum fees according to the rate determined by the government (Ministry of Education and Science, 2000; Skolverket, 2007). The grant that is provided to municipalities is to compensate for any loss of income and to maintain quality care. Specific national standards regarding adult-child ratios and group size do not exist. They are varying between municipalities as municipalities are the authority that set the standard. According to national statistical data, the ratio of children aged 1-5 years old is 5 to 6 children per adult. While the maximum group size is 17 children pre group, with a ratio of 5.4 children per trained adult (OECD, 2001; Skolverket, 2007).

Another common public child care arrangement in Sweden is Family Day Care. This is a form of child care where municipal appointed childminders provide care in their own homes. Family Day Care receives children aged 1 to 12 years. Although it is

the second most common child care arrangement for children of working and studying parents, it sometime assumes the major supplementary care role. For example, Family Day Care is more often used by parents in rural areas than cities because the pre-school is located too far from home or in the case of children who require care in a small group size (Skolverket, 2005a). In addition, it also provides care for school children outside school hours. The opening hours vary in order to fit in with the parents' schedule. The families pay Family Day Care fees in the same way as for pre-school care (Skolverket, 2005b). Like pre-school, Family Day Care is also governed by the School Act and the daily activities with children are guided by the national pre-school curriculum. Municipalities regularly make follow-up visits and evaluate the quality of family day care provided (Skolverket, 2005b).

As noted above, the majority of child care centres in Sweden are run by municipalities, but there are also some non-municipally run child care centres. Although there are a number of private operators such as companies and churches, the most common non-municipal form of child care is run by parental cooperatives (Ministry of Education and Science, 2000). These pre-schools are privately organised by groups of parents, who either employ personnel or run the centres among themselves. As with public child care, private child care centres are also expected to meet the standards of quality public child care, comply with the principles, guidelines and curriculum for public child care, charge child care fees that are similar to those for public child care and receive government funding (Ministry of Education and Science, 2000). The private child care centre operators also offer various forms of care that include pre-school, family day care and leisure time centre. There were 67, 449 children enrolled in private pre-school and family day care in 2005 (Skolverket, 2007).

The child care arrangements discussed above are mainly for children of working and studying parents. Until recently, there have not been any child care places for children (1 to 5 years old) of unemployed parents or children whose parents are on leave. However, in the Spring Budget of 2000 the government took these omissions into consideration and approved the allocation of places for these children in pre-school but with limited hours (3 hours a day up to 15 hours per week)(Skolverket, 2005b).

Generally, caregivers in Sweden have received some training to work with children (OECD, 2001; Skolverket, 2007). For example, a pre-school teacher's qualification is a three-year university programme that combines theoretical and field work on child development, family sociology and teaching methods (OECD Country Note, 1999). Other staff members (e.g., childminders) have learned basic skills in child minding and developmental psychology at the secondary school level (OECD Country Note, 1999). In addition, some municipalities conduct special training courses for childminders in family day care (OECD Country Note, 1999).

2.3.2 The child care system in the United States of America

A comprehensive national policy on child care alone or universal twin programmes of early childhood education and care does not exist in the United States (OECD, 2001; Phillips, McCartney, & Sussman, 2006). A possible reason for this is that caring for children is considered to be a family responsibility and not a collective duty (Phillips, 1991). Apart from providing funds, the federal government has a limited involvement in the child care system (Phillips et al., 2006). The duty to regulate and administer the child care system is the responsibility of every state (Gormley, 2000; Phillips et al., 2006). Every state develops its own regulations in relation to licensing requirements that include staffing, program, health and nutrition, safety and

environment, records, reporting and posting, number of children per adult, group size and caregivers' qualifications. As a result there are 50 state-based child care licensing regulations in US.

With regards to quality child care, neither federal nor state governments have developed a quality assurance system. The structural features of child care are promoted in the child care centres through regulation and licensing requirements in every state. However, due to the lack of consistency in the child care system, this method is only effective for those states or communities that have stringent licensing criteria (particularly in regard to children per adult, group size, and caregivers' qualifications). Research in the USA has indicated that a strict child care regulation is associated with sensitive and responsive caregiving (Whitebook et al., 1990). Child care centres that comply with the professional standard of licensing criteria (i.e., American Public Health Association and the American Academy of Pediatrics – APHAAA) have better classrooms where children have scored higher in cognitive and language developmental measures (Burchinal et al., 1996; NICHD Early Child Care Research Network, 1999) and are associated with positive social behaviour at 24 and 36 months. That is, there are fewer behavioural problems and better social behaviour at 24 months, and more compliance and less behavioural problems at 36 months (NICHD Early Child Care Research Network, 1999). Interestingly, however, there is still considerable variability in the stringency of regulated licensing criteria. This may be influenced by the political/historical context of any particular state. States that are concerned with children's social welfare emphasise the quality care (i.e., child care comply to child care regulations and licensing criteria) while states that do not will generally pay less attention to child care issues (Gormley, 2000).

Another aspect that is shared by federal and local authorities (states and local governments) in relation to the administration of the child care system is child care support. Child care support is not universal (i.e., not for all families) in that it is given based on families' incomes (Kamerman & Waldfogel, 2005; Phillips, 1991). This support is either through direct grant programmes or indirect support mechanisms. The direct grant programmes such as Social Service Block Grant (SSBG) and Child Care Development Fund (CCDF) derive from the federal government and are provided to the states. SSBG concerns social welfare funds (Phillips, 1991). Child care is one of 29 services that can receive SSBG. In 2005, states reported that approximately 10 percent of all SSBG expenditures were designated for child care services (U.S. Department of Health and Human Services, 2007a). CCDF is a federal grant subsidizing child care for low income families and improving quality child care (U.S. Department of Health and Human Services, 2007b). CCDF is provided under the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), which revoked other child care welfare-related funds (i.e., Aid to Family with Dependent Children - AFDC/JOBS Child Care, Transitional Child Care, and At-Risk Child Care) (U.S. Department of Health and Human Services, 2007b). Although the states have a broad discretion on the CCDF with respect to designing child care subsidies and quality improvement programmes, they are subject to federal requirements on how funds are spent. For example, states need to use at least 70 percent of the funds for poor families (i.e., families that receive Temporary Assistance for Needy Families – TANF), 4 percent for quality improvement projects and not more than 5 percent on administrative activities. The remaining funds can be used for low income working families (Greenberg, Lombardi, & Schumacher, 2000).

The indirect method of child care support is through tax credits (i.e., Earned Income Tax Credit – EITC, Child and Dependent Care Tax Credit - CDCTC, and Child Tax Credit – CTC). CDCTC is a non-refundable tax credit that benefits those high income families owing income tax. A majority of working families do not owe income tax and they do not receive a refund for this tax. However, EITC and CTC are refundable tax credits that help working parents with children. Families are refunded (with cash) for the remaining tax credits (from EITC and CTC) if their tax credit claims exceed their tax liabilities. In addition, these tax credits also benefit working families (especially low income families) because EITC and CTC do not affect the eligibility of families for Child Care Social Welfare benefits such as TANF, CCDF, etc (Burman, Maag, & Rohaly, 2005; Waldfogel, 2006).

With reference to child care provisions in the USA, there are two major categories of child care, and these specifically refer to relatives and non-relatives. Relative care is a category of care that encompasses care by the father, mother, siblings, grandparents, aunts, uncles and cousins. Non-relative care is a category comprising child care that is provided by in-home baby sitters, neighbours, friends, family day care and organized child care facilities (i.e., child care centre/day care, nursery school/pre-school, Head Start Program) (US Bureau of the Census, 2005a). Although using different forms of child care is common (Phillips et al., 2006), the majority of parents apparently prefer relative (especially grandparents) to non-relative care (organized care facility such as nursery or child care centre) for their preschool children (US Bureau of the Census, 2005a). Parents in the USA are likely to start child care before one year old as mothers tend to return to work early after delivery. For example, 51% of mothers with first children return to work within 4 months after giving birth (US Bureau of the Census, 2005b). Non-relative care, particularly organized child care and family day

care, are required to register and apply for a license from states' licensing agencies.

Usually, the child care fund (i.e., CCDF) is channelled into registered child care centres and family day care (Phillips, 1991).

The cost of child care varies with the type of care, age of children and location of residence. Informal care provided by a relative is the least expensive child care in comparison to in-home and centre care (Phillips, 1991). Families who stay in metropolitan areas pay more for child care than mothers who reside in non-metropolitan areas (US Bureau of the Census, 2005a). Thus, child care fees differ between providers and over time, the fee changes to accommodate the expenditure in child care services as the source of money for their services is mainly from fees.

Child care in the US is mainly market-driven; there is child care (especially child care centre) that is organized by the community (i.e., non-profit) and child care operated by private businesses (i.e., for profit). Both of these types of child care centres receive federal funds and they need to comply with licensing regulations. However, both of these child care options are not obligated to seek accreditation. Accreditation of the child care provisions in the US is on a voluntary basis. Although neither federal nor state governments have imposed the obligation to seek accreditation, they are encouraged to do so from The National Association for the Education of Young Children (NAEYC). NAEYC is a non-government organization that offers national quality improvement through the NAEYC Academy for Early Childhood Program Accreditation (NAEYC, 2007).

As child care providers (for-profit and not for-profit) are synchronized by child care regulations in each state, caregivers' qualifications, number of children per adult

and group size abide by the individual state's child care regulations. Generally, caregivers in charge of the classroom are required to have relevant qualifications. Several states have regulated that the caregivers' qualification in Early Childhood Education is required from accredited universities or colleges. Furthermore, the General Education Diploma – G.E.D, or High School Diploma or Child Care Professional Certificate is also preferred (National Resource Center for Health and Safety in Child Care and Early Education, 2007a, 2007b). On the other hand, there are less specific qualification requirements for assistant caregivers. They are supervised by the classroom team leader. Newly employed staff members are required to go through onsite orientation under the supervision of directors of child care or the lead caretaker. Although lead caregivers are expected to have tertiary qualifications, the status of the child care profession is still low, judging by the salaries offered. For this reason the rate of turnover is high (OECD, 2001). With regards to the structural features of quality care, the general ratio of children per adult in American child care centres is 4-6:1 for infants, 10-20:1 for pre-school children (OECD, 2001). The average child care group size in the US in general is unknown. However, the average group size participating in a NICHD longitudinal study that was conducted at 10 sites ranges from 3.3 per adult (at 6 months old), 3.8 per adult (at 15 months), 5.1 per adult (at 24 months) and 7.3 (at 36 months) (NICHD Early Child Care Research Network, 2005a). Nonetheless, the number of children per adult and group size can be higher in other child care provisions because the states and local authorities do not regularly inspect these premises.

2.3.3 The child care system in the United Kingdom

There was a lack of government involvement in the United Kingdom before the New Labour Government won the 1997 general election (Minoff, 2006; Moss, 1991; OECD, 2001). Apart from local government nurseries (i.e., under the authority of local

social services department), which deal with social welfare issues (i.e., children with disabilities or children in high risk families) (Moss, 1991), child care provisions have been operated by the private sector, and there are variations within and between types of care (Melhuish, Mooney, Martin, & Lloyd, 1990a), limited places and less affordability for low income families (Moss, 1991). However, after New Labour came to power the child care system was reformed (OECD, 2001). The new government began to play an important role in the UK's child care system. This can be seen from the objectives of the National Child Care Strategy (1998) which aimed to: (1) raise quality child care; (2) make child care affordable to all families from different socio-economic levels; and (3) make child care provisions accessible through increasing places and improving information.

In order to achieve these goals, the UK government delegates duties to the local authorities so that they can work on developing child care provisions joint ventures with private and voluntary organizations: (1) to provide sufficient child care provisions to local communities, especially with those who are low-income and have children with disabilities; (2) to improve the developmental outcomes for children under 5 years of age by providing quality early child care that is accessible to all families from different socio-economic levels; (3) to improve information delivery regarding child care for parents; and (4) to develop a simple regulatory framework that monitors the quality of early years and child care (Jarrett, 2005). With these reforms the government and local authorities aim to work together to ensure child care provisions are well organized in order to guarantee children - despite their economic background - a place in high quality child care.

Child care arrangements in the UK include crèches (i.e., occasional care; 0-5 years old), pre-schools and playgroups (2.5-5 years old), day nurseries (i.e., child care

centre; 0-5 years old), childminders (baby sitters that look after children in the baby sitters' own home; 0-8 years old) and nannies (a person who provides childcare in the child's own home; usually from 0 - up to 8 years old) (Directgov, 2007). The most common type of care for children under 3 years of age is relatives and childminders (Moss, 1991). However, the child care arrangements for children in their early years may have changed in these recent years as a government-funded local program known as the Sure Start Programme was developed to provide a service that integrates the centre child care, early education, health and family support (Sure Start, 2005). In the initial phase, 524 centres were built and now, in conjunction with the Ten Years Strategy for Child Care, more Sure Start Programmes centres are established and the British government aims to have 2,500 centres by 2008 and 3,500 by 2010 (HM Treasury, Department for Education and Skills, Department for Work and Pension, & Industry, 2004b). As the Sure Start Programmes were mainly developed in disadvantaged areas that aimed to provide child care support for low income families, many parents in this income band who do not have access to formal child care arrangements are now able to enrol their children in child care centres (i.e., Neighbourhood Nurseries) (Sure Start, 2005).

Unlike children under 3 years of age, children aged 3-4 years usually have an early childhood education program (at nursery school or nursery class) of five two-and-a-half hour sessions (OECD, 2001). Beginning in 1997, children under this age group were awarded free early childhood education and care programmes in child care and pre-school centres. The amount of care increased from 12.5 hours per week for 33 weeks a year to 15 hours per week for 38 weeks a year in 2007. In the long term (in 2010), it will increase to 20 hours per week, which can be spread over a minimum of three days (HM Treasury, Department for Education and Skills, Department for Work

and Pension, & Industry, 2004a). Parents can adjust the free entitlements according to their working hours, which are normally between 8.00am to 6.00pm. Parents who need more hours for child care from the hours funded by government will need to pay fees for additional care. Thus this short free child care requirement provides opportunities for parents with children aged 3-4, to continue working.

Before 1997, UK government did not participate in the child care system and therefore there was no national quality assurance system in place. As a result, the regulatory systems that were administered by local authorities to monitor child care were irregular and ineffective (Moss, 1991). However, after the National Child Care system was introduced, serious emphasis was given to establishing a child care regulatory system requiring child care services to register and be inspected by authority agencies. Although this policy is applicable throughout the UK, there are different agencies that carry out these responsibilities (e.g., the Office for Standard in Education, Children's Services and skills - OFSTED in England and Wales; Her Majesty's Inspectorate of Education – HMIE in Scotland). OFSTEAD's duties include: (1) registering child care services and (2) inspecting the registered child care services. All child care services for children under 8 years of age must register (i.e., full day care; sessional day care; creches, out of school care, and childminding) (Sure Start, 2008). Child care provisions are evaluated against the national standard that covers the major aspects of health and safety, child protection, special needs, care, learning and play (Sure Start, 2008). The UK government is strongly committed to making child care services available, accessible and affordable. It is committed to allocating grants to local authorities so that they can carry out their duties to supply sufficient new child care services. With government funding and partnerships with private and volunteer

organizations, local authorities are likely to achieve the target of building 3,500 Sure Start child care centres by 2010.

Local authorities are mandated by the government to supply child care provision and parents are expected to pay for the costs of child care. The child care fees vary with age of children, type of care and region/location. Child care fees for children under two years old are higher than those for children who are older than two; nurseries are more expensive than childminders and city areas (such as London) have higher child care fees than rural areas. In addition, child care fees also vary throughout the UK (Daycare Trust, 2008).

In order to reduce the burden of child care costs and to ensure all children have the same experience of child care in early life, the government has increased the percentage of child care elements in the Working Tax Credit (HM Treasury et al., 2004b). Other financial assistance occurs : (1) if parents lose their jobs, Jobcentre Plus offers assistance with the cost of child care up to 7 days; (2) employers are encouraged to support child care with £50 per week, which makes them exempted from tax and National Insurance Contributions; and (3) flexible utilization of free early childhood education and care for 3 and 4 years old children (as reported above), which helps parents (with preschool age children) remain in the workforce.

Most caregivers in local and private nurseries in the UK have a Nursery Nurse Examination Board (NNEB) qualification. Many nannies also have NNEB qualifications. However, the majority of childminders do not hold NNEB qualifications or other structured programmes. Childminders usually are encouraged to participate in the child care training that is organized by local authorities (Moss, 1991). In the national standard for child care regulations, OFSTED has documented the different

qualifications for varying child care arrangements. In the nurseries, the staff qualification is level three in the area of child care or child development for managers or supervisors and level two qualification for staff (at least half of the staff have this qualification) (Department of Education and Skills & Department for Work and Pensions, 2003a). Childminders are required to attend a pre-registration course six months before commencing working and also must have a certificate in First Aid (Department of Education and Skills & Department for Work and Pensions, 2003b).

In the Ten Years Strategy for Child Care, higher and relevant qualifications are recommended for caregivers. The lead caregivers in child care are expected to have a degree in relevant fields such as Early Childhood Program while other caregivers are encouraged to continue their professional qualifications up to degree level. Childminders and other approved home based carers are recommended to have a level 3 qualification. In addition, local authorities are working to improve the professionalism of childminders by working together with professional caregivers who are child care centres or in school. With this strategy childminders can offer child care from home to support parents' working hours more flexibly, but they continue to receive training and support (HM Treasury et al., 2004b).

2.3.4 The child care system in Australia

In Australia, the Early Childhood Education and Care is under the Office of Early Childhood Education and Child Care (OECECC) that has been established within the Department of Education, Employment and Workplace Relations (DEEWR) (DEEWR, 2010). It incorporates with the Children's Group, from the Department of Families, Housing, Community Services and Indigenous Affairs -FaHCSIA) in leading

the nation to achieve a nationally consistent system of quality care that is accessible and affordable for Australian Families (Australian Government, 2010)

At the national level, states and territory governments are responsible for developing and enforcing child care services regulations and licensing. All states and territory governments have separate child care services regulations. For example, the child care centre regulations in South Australia come under the Children's Services Regulations 1998 (DECS, 2007a), in Victoria, it is under the Children's Services Regulations 1998 (Department of Human Services, 2007) and, in New South Wales, the regulations are under the Children's Services Regulation 2004 (DoCS, 2007b). The child care regulations and licensing requirements include: (1) staffing (i.e., number of children per adult, caregivers' qualifications and training); (2) child care facilities; (3) health and safety requirements; (4) children's programs/curriculum; and (5) health and safety regulations (DECS, 2007a; Department of Human Services, 2007; DoCS, 2007b). Hence the Australian government's role (policy making, distributing funds and regulating of quality child care) complement the minimum roles of every state.

With respect to the different child care regulations and licensing requirements in each Australian state, further discussions will elaborate on the states' licensing requirements on: number of children per adult; group size; and caregivers' qualifications. The literature has suggested that these elements have important effects on children's development (Howes & Hamilton, 1992; Whitebook et al., 1990). The discussions on these elements (i.e., number of children per adult; group size and caregivers' qualifications) in this chapter will reflect child care regulations and licensing requirements in South Australia (SA) and New South Wales (NSW). NSW has been chosen because most longitudinal research studies in child care in Australia have been

undertaken in NSW (Bowes et al., 2003; Harrison & Ungerer, 1997, 2000, 2002).

Reviewing the state child care regulations and licensing requirements will provide insights into the effect of child care on children in NSW. SA has been selected because data collection took place in this state.

A comparison of the child care regulations in NSW (i.e., Children's Services Regulations 2004) (DoCS, 2007b) and South Australia Children's Services Regulations 1998 (DECS, 2007a) suggests some differences between them. First, regulation on the number of children per adult in NSW is lower than in the SA. In the new NSW Children's Services Regulations 2010, the state government agreed the ratio for children under 2 years old is 4:1. New child care services commencing after 1st. September 2010 are required to comply with the ratio after that date, while for existing services, they are given a transition period and obliged to the rule by early 2011 (NSW Government, 2010b). Unlike NSW, the regulation on the number of children per adult for children under 2 years old in SA is currently 5:1. However, SA government is keen to reform the Education and Children Services regulations (Government of South Australia, 2010). In the new Children Services regulations, children less than 2 years old in SA are also will experience the ratio of 4:1 in the near future. In addition to the number of children per adult for children under 2 years old (i.e., 5:1), the regulations in both states have stated also the different ratios for older ages. Table 1 shows the number of children per adult for the two states. In general, NSW requires fewer children per adult in comparison to SA. Also, NSW has smaller group sizes per adult than SA (DECS, 2007a; DoCS, 2007b). Third, in relation to caregivers' qualifications, both states are also differ with respect to the qualification requirements for positions in child care (i.e., authorised supervisor, primary contact staff for children under 2 and teaching staff) (DECS, 2007a; NSW Government, 2010a). The qualifications that are accepted by authorities range

from relevant certificate from TAFE such as a Child Care Certificate of Child Care Services, Diploma in Children's Services, Degree in Early Childhood Education and etc. A main difference between NSW and S.A. is the requirement for degree-qualified early childhood teachers for more than 29 children. Unlike S.A., NSW has adopted more child care regulations that recommended by earlier studies and have positive child developmental outcomes. Thus, research findings conducted in NSW have indicated a positive relationship between children who attended regulated child care and their developmental outcomes (Bowes et al., 2003; Harrison & Ungerer, 1997, 2000).

Besides licensing criteria, another aspect of child care that is not standardized between and within the states concerns child care fees (FaCSIA, 2005). In Australia, child care fees are not regulated by any authority. Child care providers are free to determine the fee structure of their services but the amount of fees must comply with any relevant legislation, such as trade practices legislation and disability discrimination legislation (FaCSIA, 2007c). For this reason, child care fees vary between child care providers (FaCSIA, 2005). In addition, different licensing requirements and additional services that are provided in the centres may influence differences in child care fees between states.

Table 2.1

Summary of the regulations on number of children per adult, group size and caregivers' qualifications in NSW and SA

States	Number of children per adult	Number of children in a group per qualified contact staff	Caregivers' qualification
NSW	4:1 (children under 2 years old) 8:1 (children 2 to 3 years old) 10:1 (children 3 to 6 years old)	10:1 (children under 2 years old) 16:1 (children above 2 but under 3 years old) 20:1 (above 3 but under 6 years old)	Among recommended qualifications: i) certificate III & IV from TAFE ii) certificate of children's services iii) Diploma in community services/ children's services Teaching staff: i) relevant degree in Early Childhood Education
SA	5:1 (children under 2 years old) 8:1 (children above 2 years old but not going to school) 20:2 (if the number of children exceed 8) 10:1 (if the children exceed 20) 15:1 (children above 2 years old and going to school)	20:1 (children under 2 years old) 35:1 (children above 2 years old but not go to school) 30:1 (children above 2 years old and attend school)	Among recommended qualifications: Tertiary qualifications in child care or early childhood education or equivalent to it

Unlike the requirements for licensing and fees structure, which vary from state to state, other aspects of child care such as child care arrangements and opening hours are similar. In Australia, child care arrangements are categorized into formal and informal care. Formal child-care arrangements are those child care arrangements that are regulated and registered with state representatives (e.g., Department of Education and Children's Services – DECS in South Australia and Department of Community Services – DoCS in NSW). Informal care arrangements are those forms of child care that are not regulated by state authorities (such as grandparents, relatives, friends and neighbours). The formal child care arrangements for children under school age across states include Child Care Centre (CCC) and Family Day Care (FDC). CCC are primarily run by private sector organizations while FDCs are organized by an individual carer. There are three major CCC providers in Australia, namely: (1) community-based (non-profit); (2) independent private (for profit – small business); and (3) corporate chains (for profit - publicly listed corporations) (Rush, 2006). Both of these child care arrangements (i.e., CCC and FDC) must be legally accredited in order to receive child care subsidies (i.e., CCB, CCTR and JETCCFA). A total of 5495 child care centres and 328 family day cares have gone through accreditation process as of January 2, 2008 (NCAC, 2008a, 2008b).

Usually, child care centres open for an average of 10 hours 48 minutes, five days a week and sometimes open on weekends. Formal child care is also offered full-time or as half day care (FaCSIA, 2005). The Australian Bureau of Statistics documented that the majority (79%) of children were in child care centres on weekdays only (ABS, 2006b). The percentage of children who attend child care one or two days per week is higher than that of children who attend three or more days per week. With respect to the

length of time children spend in child care, the majority of parents use less than 10 hours per week in either formal or informal care (ABS, 2006b). Hence the administration of the child care system in Australia shows much consistency between the states. The minimum conditions for licensing are quite similar although NSW has implemented marginally higher minimum requirements. This may influence the research findings conducted in NSW.

2.4 Part III: Parental leave, child care system and child care characteristics

2.4.1 Parental leave and children's age of entry into child care

The provision of long paid parental leave is closely linked to the age of children who enter child care. In Sweden only a small number of children attend child-care before one year of age. The National Agency for Education reported that only 30 children (0.01%) under one year old entered child care in 2005, but there were significantly more children aged 1-3 years old (75.3%) (Skolverket, 2007). In contrast, Australia has more infants that begin attending child care before they are one year old. The Australia Bureau of Statistics (2006) reported that the percentage of children under one year old in formal child care was 7% and 43% in informal child care (ABS, 2006b). A high proportion of children also attend child care before the age of 12 months in the United States. A longitudinal study by NICHD Early Child Care Research Network (NICHD Early Child Care Research Network, 1997a) indicated that out of 1,291 participating families (i.e., those remained in the studies up to 12 months) from 10 study sites, 84% of the children experience regular non-maternal care during the first year. The average age of these children first entering to child care was 3.11 months (NICHD Early Child Care Research Network, 1997a, 2005b). The findings indicate that children mainly enter child care very early in their life. Like American children, British children also start child care early. Although the United Kingdom has awarded 52

weeks maternity leave, only the first 26 weeks are considered paid leave whereas the other 26 weeks, which are known as additional maternity leave, are unpaid (TUC, 2007). Consequently, many women return to work when their children are aged 4 or 5 months (Moss and Brannen, 1987). With respect to the different characteristics of parental leave, the majority of children in the UK and the USA, and half of children in Australia attend child care early in their life. In contrast, very few Swedish children attend child care before they are one year old as parents are awarded with 18 months paid maternity/paternity leave (i.e., 80% of salary).

2.4.2 The association between child care system and children's experience with child care arrangements.

As the period of parental leave finishes or parents need to go back to work earlier than expected, parents start to find child care arrangements for their infants or toddlers. Every parent may differ with respect to the reasons why they choose certain type of child care. Some parents may be concerned with the safety, fees, flexibility, availability and suitability of the type of care available to their children, while others may consider structural and process features of child care as the main concern. Studies have suggested structural and process features that have significant impact on child development. The features include classroom physical environment, number of children per adult, group sizes, caregivers' qualifications and attitudes, caregiver-child interactions and early childhood curriculum (Broberg et al., 1997; Howes, 1998; NICHD Early Child Care Research Network, 1999, 2005c; Peisner-Feinberg et al., 2001). In relation to the empirical evidence of the child care features, policy makers have implemented the findings in child care regulations. The execution of the child care regulations is to make sure children receive quality child care. Although research has indicated that child care features are important and meeting recommended standards of child care features has a positive effect on children's development, there are still child

care systems of some countries that contribute less to recommended child care features (see Part II above). This section attempts to discuss how different child care systems across countries associate with children's experience with child care.

Children are more likely to experience quality child care (i.e., child care that complies recommended standard of structural features) when the child care system is highly regulated and monitored nationally, and able to receive either direct or indirect financial support from governments. For example, in Sweden, every child whose mother returns to work after one year is guaranteed a child care arrangement by local municipalities. The child care arrangements (i.e., pre-school centre and family day care) that are provided by the local authority and private providers are regulated and of high quality because both municipalities and private child care providers are required to comply with national preschool curricula, submit reports to the relevant government agency that monitors quality every year and receives a direct grant to provide quality child care. In addition, the fees for child care in Sweden are charged to parents according to their income and number of dependent children. Therefore, choosing quality child care (i.e., child care that complies with recommended standard of structural features) in Sweden is not difficult for parents because places are available and the fees are affordable.

Unlike Sweden, parents in Australia do not have a standardized national child care system. Every state has its own licensing regulation system but similar to Sweden there is a national quality assurance system that regulates and monitors child care in every state. Although the national child care accreditation is on a voluntary basis, the majority of child care centres and family day care seek accreditation (NCAC, 2008a, 2008b). Therefore, Australian parents also can choose quality child care arrangements and the federal government encourages parents to choose nationally accredited child

care by imposing the rule that child care subsidies and tax rebates are paid upon using accredited child care. However, there are still parents who use non-regulated child care for children under 1 year old (ABS, 2006b) or a mixed of regulated and non-regulated child care for children under 3 years old (ABS, 2006b). Several factors that found to have a significant contribution to the multiple child care arrangement were family financial difficulty, lack of places in the formal child care, maximise the quality of care for their children by exposing children with different experiences of care and family demographic characteristics. (Bowes et al., 2003; Goodfellow, 1999; Qu & Wise, 2004). Thus, in the Australian context, children's attendance to regulated or non-regulated child care is more likely associated with several factors that influence parental choice rather than the child care system per se. Although, child care subsidies and quality child care arrangements are available for all children from different socio-economic backgrounds, some Australian parents still send their children to non-regulated child care.

The tendency of parents to rely on their family or personal reasons in choosing between low quality (i.e., child care does not comply with recommended standard of structural features) and high quality (i.e., child care complies with recommended standard of structural features) child care arrangements may become greater when society has a poorly structured child care system. Unlike Sweden and Australia, there is neither a standardized national child care system nor standardized national quality assurance system in the United States. Except for the provision of funds for poor families to send their children to child care, all matters regarding child care are state responsibilities. Because there is a lack of government supports (i.e., availability quality child care arrangements and universal child care financial assistance) for parents to send their children to regulated child care provisions, parents are more likely to used non-

regulated child care, especially when this type of child care suits mothers' employment, budget and daily schedule. Data from the NICHD Early Child Care Research Network suggests that the most common type of child care for the participating children during the first 12 months are father/partner care, care in a child care home by a non-relative, and care by relatives. However, the forms of care change after children turn one year old as mothers change their employment status from part-time to full-time. This employment status means that mothers who have non-daytime work hours used more father care than that of a mother working during the daytime. In addition, mothers who work varying work shifts also used more father care (NICHD Early Child Care Research Network, 1997a, 2005b). In the US context that has limited government support for child care, parents are more likely to choose child care arrangements for their children based on family factors (NICHD Early Child Care Research Network, 1997b).

Similar to the United States, the most common type of child care in UK is relatives and child minders (Moss, 1991). Parents choose these types of care arrangements because the UK government has not established a national child care centres for children whose parents are working like in Sweden or providing child care financial assistance for parents who send their children to formal child care like in Australia. However, after the National Child Care Strategy has launched, British parents were provided with more variety in child care arrangements through the Sure Start Local Programme project (such as Neighbourhood Nurseries and Childminding). Even though the Sure Start programme is not able to provide child care centres, the programme staff will direct parents to the available child care arrangements in the community. In the "Ten Year Child Care Strategies", the UK government aims to provide adequate child care provisions to all children, especially children of working

families in disadvantaged areas. In addition, the free and flexible but limited hours of child care for children 3-4 years of age provide another child care option for parents. The new child care policy in the UK provides more options for parents to enrol their children into regulated child care. Thus, except for Sweden, parents in other countries play more important role in influencing characteristics of child care arrangements for their children.

2.5 Summary

The aim of this chapter was to describe the statutory parental leave arrangements in several countries and how social policy influences when children start attending child care. Included in this chapter is an international comparison of the systems existing in several major first world countries including Sweden, the United States, the United Kingdom and Australia. The review highlighted a number of systematic differences, not only in the factors that contribute to parental decisions to enrol children in child care, but also the quality and type of care provided. In Sweden, children usually enter child care from one year of age because of the availability of paid parental leave and regulated public child care services. Parents usually do not return to work until their children are one year old and they then send their children to the public child care service that is supplied by local municipalities. In contrast, in other countries such as the USA, UK and Australia, parents are more likely to return to work earlier because parental leave provisions are usually less generous than in Sweden. The type of child care arrangement chosen will be subject to greater variability and will be more subject to combination of personal and family characteristics. For example, parents in the USA, UK and Australia are more likely to rely upon non-regulated child care for their infants because of the high cost of obtaining formal care as well as a stronger preference for child care provided by family members such as grandparents. Although the association

between the social system and child care characteristics has been less investigated in a scientific sense, research that has examined the relationship between family factors and characteristics of non-maternal care suggests that the social system indirectly influences parents' decisions on type of child care chosen, the age children enter child care, and the amount of time spent in child care (Bowes et al., 2003; NICHD Early Child Care Research Network, 2005k; Qu & Wise, 2004; Sylva et al., 2007). These issues are discussed in more detail in Chapter 3.

Table 2.2

Summary of the Child Care System in Sweden, United States, United Kingdom and Australia

	Administration of child care system			Provision of child care system			Staffing and Training		
	Government involvement	Government Funding	Quality Assurance System	Child care Provider	Age of entry and attendance	Role of child care provisions	Children per Adult	Qualification	In home training
Sweden	The Ministry of Education and Science ↓ The National Agency of Education ↓ Municipalities	Direct funds to child care providers (public and private)	Standardized quality assurance system	Public (run by municipalities) and private	From one year old (for children of working and studying parents)	Play Twin Roles equally (Early Childhood Education and Child Care)	5:1 (in pre-school centres); 13:1 (pre-school class)	Pre-school teachers have three years relevant university program; child minders have secondary qualification	Municipalities conduct special training for childminder in Family Day Care.
The United of America	Federal government provides most funding. States regulate child care through licensing requirements.	Both direct and indirect funds	No standardized quality assurance system	Private (profit and non-profit)	From birth (all children)	Mainly provides child care	4-6:1 (Infants); 10-20:1 (pre-school)	Tertiary qualifications for the teacher or head child care givers. No specific qualification for assistant child care givers	New staff is given in home orientation to familiarize with the job and duty under supervision of director or head teacher.

	Administration of child care system			Provision of child care system			Staffing and Training		
	Government involvement	Government Funding	Quality Assurance System	Child care Provider	Age of entry and attendance	Role of child care provision	Children per Adult	Qualification	In home training
The United Kingdom	The UK government has limited involvement in child care before 1997. After 1997, participated in child care system by working together with local authorities for the Ten Years Strategy for Child Care	Not available in the past. However, in the Ten Years Strategy for Child Care both direct and direct funds are available	Ten Years Strategy for Child Care proposed high quality assurance system that is carried out by OFSTED	Private, volunteer (for children of employed parents) and public (i.e., public nursery for special needs children).	From birth (all children)	In the new system of free child care for 3 and 4 years old according to described hours, children are provided with early education program	8:1 (in private nursery). OFSTED regulated national ratio to be: 3:1 (0- 2 yrs old) 4:1 (2-3 yrs old; 8:1 (3-7 yrs old). Group sizes - not exceed 26 children	In Ten Years Strategy for Child Care, child care managers/supervisors are expected to have high relevant qualifications (level 3), while other staffs are encouraged to have level 2 qualifications.	More in-house training for childminders in Ten Years Strategy for Child Care
Australia	Commonwealth develops child care policies while states regulate licensing requirements	Indirect funds (CCTR - tax rebate) and child care subsidies (CCB & JETCCFA)	Standardized quality assurance system (QIAS for CCC, FDC & OSHC)	Community Based and Private Corporate	From birth (all children)	Mainly provides child care	E.g., in NSW: 4:1 (0-2 yrs old) 8:1 (2-3 yrs old; 10:1 (3-6 yrs old).	Generally, CCCs require head child care givers to have relevant tertiary qualifications	Conducted by child care providers

Chapter Three

Child Care and Children's Developmental Outcomes

3.1 Introduction

Bronfenbrenner's Ecological Theory posited that individual development is influenced by four interconnecting environmental systems that include the: (1) *microsystem*; (2) *mesosystem*; (3) *exosystem*; and (4) *macrosystem*. The microsystem is a social setting in which the individual lives. It includes family, school, child care, neighbourhoods and peer groups. Social 'units' within this system are very close to the individual and interact with the person so that these individuals can have a direct influence on individual development. The mesosystem refers to the relationship between the units within microsystem, for example, the relationship between teacher and parents. The broader system, the exosystem, includes local government, mass media, neighbours, friends of family and social welfare services. Such social agents or units usually do not have ongoing interactions with the individual, but can influence individual development indirectly (e.g., through policies and services). The final level, the macrosystem, relates to the culture or ideology governing human behaviour. It refers to the beliefs or knowledge that is passed from generation to generation to the next and this, as with macrosystem influences, can have an indirect influence on individual development (Bronfenbrenner, 1979).

A similar logic can be used to apply the principles of ecological theory to the study of child development. The nearest system to the child (i.e., microsystem) affects child development directly, whereas the systems more distant from the child (i.e., exosystem and macrosystem) do so more indirectly. For example, child care may affect child development, but some children are sometimes not enrolled in child care that is high quality (i.e., that meets recommended professional standards in terms of the number of children per adult, group size, and the qualifications of caregivers), because it is too expensive. In such situations, the government (an exosystem element) can affect parents' choices either directly by funding quality child care, or indirectly through the provision of child care benefits or child care tax rebates that enable parents to afford to send their children to quality child care. The extent to which child care is accepted as an appropriate service for children or choice for women may, in turn, be influenced by broader cultural and religious factors passed down from one generation to the next (the macrosystem).

Although a comprehensive study of child development should, wherever possible, investigate variables at every level of this ecological framework, most research has tended to focus on the microsystem because it relates to elements which influence with the children directly. This logic extends to the current project which investigates the influence of child care, the amount of time and quality child care, and other family background variables on child development.

3.2 Part I: Quantity of child care and children's development

Studies on the effects of the amount of time in child care on children's development have yielded varying results (Baydar & Brooks-Gunn, 1991; Belsky & Rovine, 1988; Harrison & Ungerer, 1997, 2000; NICHD Early Child Care Research Network, 2002a).

Some researchers have reported no effect (Harrison & Ungerer, 1997; NICHD Early Child Care Research Network, 2000b, 2005d, 2005h), while others have reported either a positive effect (Broberg et al., 1997; Sylva et al., 2003) or negative effect (Belsky et al., 2007) on cognitive development. In general, studies have reported more negative influences on children's social development, especially when children experience early and very high numbers of hours in care per week (Baydar & Brooks-Gunn, 1991; Belsky, 1988; Belsky & Braungart, 1991; Belsky & Rovine, 1988; NICHD Early Child Care Research Network, 1998a, 2002a, 2005h, 2005i). The section that follows (part 1) critically reviews the research findings that relate to the effect of the quantity of child care on children's cognitive and social developmental outcomes.

(a) Effect of Quantity Child Care on Child Cognitive Development

For the most part, evidence relating to the amount of time spent in child care per week (i.e. usually more than 10 hours per week) on children's cognitive development typically indicates no significant effects for children at 15, 24, 36, and 54 months of age (NICHD Early Child Care Research Network, 1998a, 2002a, 2005h). This finding is supported by a study in the United Kingdom that researched the effect of half-day or full-time child care/preschool programmes on children's cognitive development. This major longitudinal study (The Effective Provision of Pre-School Education project – EPPE; 1997-1999) recruited 3,000 children attending publicly or privately funded pre-school programmes either on a full-time or part-time basis, and showed no difference in their intellectual functioning at the age of 60 months (i.e. 5 years old) (Sylva et al., 2003). Similarly, a study in Australia also showed no effect of time in child care on children's cognitive development. In the preliminary findings of wave 1 of the Child Care Choices study involving 539 children aged 0-3 years old, it appeared that the number of hours spent

in child care was not related to children's language and communication skills (Bowes et al., 2003).

The preceding studies examined the effect of average hours per week in part-time or full-time child care on cognitive abilities. However, studies that have employed a different measure of time in child care (i.e. duration in months) have suggested that spending more than 36 months in care (part-time or full-time) during the preschool years can have a positive effect on the cognitive abilities of children at eight years old (Broberg et al., 1997). Similarly, the findings from the British EPPE project indicated that the duration (in months) spent in pre-school centres had a significant influence on developmental outcomes. Specifically, children who started a pre-school programme early (under 3 years old) have more positive cognitive developmental outcomes at 5 years old (Sylva et al., 2003).

It is thought that these beneficial results arise because child-care provides children with structured and varied activities from an early age. Such activities as well as the ongoing interaction with other children enhances the development of cognitive / formally assessed skills, but also informal skills (e.g., the ability to relate to peers) (Broberg et al., 1997; Sylva et al., 2003). Given that this knowledge tends to develop over time, it appears that spending a longer time in care (in months) is more beneficial than the intensity of the child-care (number of hours per week). In contrast, children who start child care later in life, even though spending long hours in the centres, may miss out on the long-term benefits of these skills and be less prepared for entry into primary school or pre-school.

As in the SFDP study (Harrison & Ungerer, 2000), the NICHD study in USA also followed the participating children from birth until the sixth grade and similarly showed

that the number of hours the child spend in childcare during their first 4 ½ years of their life had a negative effect on child cognitive development (Belsky et al., 2007). A greater number of hours between the age of three and 54 months was associated with lower scores on measures of vocabulary, but there was no indication that the age of entry to child care influenced child cognitive development. In contrast to the SFDP study, US-based NICHD study (Belsky et al., 2007) controlled for demographics (e.g. child's age, gender), the type and quality of child care and family background factors (e.g., income and maternal education) variables in the data analysis.

(b) Effect of Quantity Child Care on Child Social Development

Many studies have been conducted to examine the effect of the amount of time spent in child care on children's social developmental outcomes. Studies have indicated that the amount of time spent in child care significantly affects children's attachment behaviour (Baydar & Brooks-Gunn, 1991; Belsky & Rovine, 1988), behaviour problems (NICHD Early Child Care Research Network, 2005i, 2005q), and social competence (Campbell, Michael, & Hwang, 2000). However, research on the effect of the amount of child care on infants' attachment behaviour has shown inconsistent results. Some studies have found that high numbers of hours spent per week in child care was associated with more insecure attachment behaviour (Baydar & Brooks-Gunn, 1991; Belsky, 1988; Belsky & Rovine, 1988), whereas other studies have found evidence for more secure attachment behaviours (Harrison & Ungerer, 1997; Roggman, Langlois, Hubbs-Tait, & Rieser-Danner, 1994); and still others have found no effect on attachment behaviour (NICHD Early Child Care Research Network, 1997c, 2005n).

As an example of research that has found negative effects, Belsky and Rovine (1988) showed that the percentage of children classified under insecure-avoidant categories is higher among infants who attend full-time and extensive part-time child care than home care. The results suggested that infants who were exposed to 20 or more hours of care per week had a significantly increased risk of insecure infant-mother attachment relationships at 12-13 months of age. This result may be due to the level of interaction or contact between mothers and infants after child care sessions. If mothers used child care so as to provide opportunities for work, it is possible that they may have been more occupied with other activities such as household (cooking, cleaning and doing laundry) when they returned home. As a result, there would be less time for mothers to spend with their infants and less opportunity for strong and secure attachments to develop.

On the other hand, other studies have obtained different findings. The Sydney Family Development Project (SFDP) suggested that infants experienced insecure attachment when they attended child care less than 10 hours per week (Harrison & Ungerer, 1997). Similarly, a study in the United States (Roggman et al., 1994) indicated that infants experienced insecurity when their mothers work part-time (10-20 hours a week) rather than full-time (>35 hours per week). In contrast to Belsky and Rovine's (1998), findings of two studies (Harrison & Ungerer, 1997; Roggman et al., 1994) suggest that the problems of infant-mother insecure attachment could be reduced if children spend more than 20 hours per week in child care. A possible reason for this is that, when children are separated from their mother, they need some time to adjust to the different care environment and carer. Therefore, if insufficient time is allowed for children to adjust, they will find the child care experience more disruptive.

Unlike those studies (Belsky & Rovine, 1988; Harrison & Ungerer, 1997; Roggman et al., 1994), the NICHD study indicated that the amount of time has no relationship with infants' attachment behaviour (NICHD Early Child Care Research Network, 1997c, 2005n). However, despite this finding, it cannot necessarily be concluded that the amount of time spent in child per week is completely unrelated to attachment security. Interaction effects examined in the NICHD study showed that that effect of the number of hours in care on infants' attachment behaviour may be moderated by maternal sensitivity and responsiveness. That is, it was found that infants exhibited insecure attachment behaviour when the infants spent high amount of hours in child care and their mother reported low maternal sensitivity and responsiveness (NICHD Early Child Care Research Network, 2005n).

In addition to the effect of the amount of time spent in child care on child attachment behaviour, studies have also investigated the effects of the cumulative amount of hours in child care (i.e., beginning during infancy until preschool or kindergarten age) on social behaviour at later ages - toddlerhood, preschool, kindergarten and early school age. This research has observed relationships between high numbers of hours in per week in child care and child behaviour problems and social competence (Campbell et al., 2000; NICHD Early Child Care Research Network, 2005i, 2005q). For example, the NICHD (1998) study conducted in US found that too much time spent in child care was related to heightened behaviour problems at two years of age as reported by caregivers and less social competence as reported by mothers (NICHD Early Child Care Research Network, 1998a). However, in contrast to NICHD, an Australian study reported that the amount of time spent in child care was not associated with differences in social competence with peers in children aged 2.5 years (Harrison & Ungerer, 2000). In addition, the NICHD study (1998)

conducted in US did not find any significant relationship between the amount of time in child-care and social developmental outcomes at three years old although the relationship had been previously significant when children had been two years of age. Surprisingly, the significant effect of time in child-care on social problems appeared again when children were transitioning to kindergarten (4.5 years old) (NICHD, 2003). Similar to the NICHD (2003) study, the Australian study indicated that the effect of the amount of time spent in child care may take some years to materialise. Moderate amounts of time in child care (11-30 hours/week) across the first 2.5 years of life appears to have a significantly negative effect on children's self-concept at school age (5-6 years) (Harrison & Ungerer, 2000). These findings are generally consistent with Belsky's (1988) findings that extensive hours of non-maternal care within the first 12 months combined with insecure attachments with parents can give rise to subsequent aggressive and non-compliance behaviour during preschool and early school-age years.

In summary, the existing research literature suggests that the amount of time spent per week in child care can have a significant effect on children's social behaviour. The number of hours in care has been shown to be a significant predictor of negative social development as early as infancy through to later ages (i.e. kindergarten and early school ages). At the same time, although studies have shown that negative social outcomes were noticeable if amount of child care exceeded certain amounts of time, the NICHD studies found that there was no specific time threshold that predicted children's developmental outcomes. Instead, the relationship appears to be more linear in nature (NICHD Early Child Care Research Network, 2003c). The more hour children spend in child care continuously from infancy, toddlerhood, preschool and kindergarten, the higher the risk for negative social developmental outcomes, but it is also clear that the quality of child care as well as

the nature and quality of family relationships also needs to be taken into account when considering these findings.

3.3 Part II: Quality of child care and children's development

Studies have consistently indicated that high quality child care can have a significant impact on children's cognitive and social development. In Part II, a summary is provided of studies that have examined the features that typify quality child care and the effects it can have on child developmental outcomes.

Child care quality can be assessed both in terms of its structural and process features. Structural features are defined as the physical characteristics of child care that can be regulated and these can include: the number of children per adult, the group size and the qualifications and specific training undertaken by care-givers. In contrast, process features are defined as child care features that cannot be regulated. Examples include: the caregivers' behaviour and characteristics, their attitudes towards children and how they interact with the children under their care. Process and structural features can influence child development in different ways. Process factors are generally thought to have a direct effect on child development, whereas structural features influence outcomes indirectly (Howes et al., 1992; NICHD Early Child Care Research Network, 2002b). For example, although warm, sensitive and responsive caregiving is a process feature, the likelihood of this style caregiving being provided is likely to be greater when the child care facility has fewer children per adult and smaller group sizes (NICHD Early Child Care Research Network, 1996, 1999, 2000b).

Since the structural features of quality child care can be regulated, studies have been conducted to investigate the appropriate structural standards that are considered to be conducive to high quality care. Research has, for example, examined the effectiveness of the American Public Health Association's and American Academy of Paediatrics' structural standards (APHA & AAP 1992). These standards relate to the appropriate ratio of adults to children within child care centres (3:1 for 6-15 months, 4:1 for 24 months, 7:1 for 36 months with recommended group sizes of 6 for 6-15 months, 8 for 24 months and 14 for 36 months), as well as the qualifications of caregivers who are expected to have post-high school training in child development and early childhood education. The results showed that compliance with these standards was associated with (a) fewer behaviour problems and more cooperative behaviour in children aged 24 and 36 months of age, (b) greater readiness for school and language comprehension scores at 36 months of age (NICHD Early Child Care Research Network, 1999, 2005c). Another study in the USA that used a similar recommended standard found that having fewer children per caregiver was positively associated with African-American children's overall communication skills at 12 months and their language skills at 36 months (Burchinal et al., 1996; Burchinal et al., 2000a).

Similar results emerged from other research in US but used another professional standard for structural features (i.e., Federal Interagency Day Care Requirements – FIDCR) that was set up earlier than APHA & AAP which required ratios of 3:1 for 0-23 months, 4:1 for 24 months, 8:1 for 36 - 72 months/ 3 – 6 years old and group sizes (6 for 0-23 months; 12 for 24 months; 16 for 36 - 72 months/ 3 – 6 years old). Centres that met the FIDCR standards in US were rated more highly and were found to have classroom environments characterised by less harsh disciplinary techniques and more sensitive interactions with

children (Phillips, 1992). Children in these centres had greater social competence with peers and adults at 14 to 54 months of age (Howes et al., 1992). Thus, it was concluded that having a low ratio of adults to children and smaller group sizes as well as more qualified caregivers was more likely to lead to favourable developmental outcomes.

Along with the effect of structural features of quality care, studies in Sweden, US, Australia and UK also have examined how process features can influence child developmental outcomes. These process features include: overall classroom quality, caregiver and child interactions, positive caregiving, the choice of developmentally appropriate activities, as well as the level of language stimulation (Burchinal & Cryer, 2003; Campbell et al., 2000; Howes et al., 1992; McCartney, 1984; Melhuish, Mooney, Hennesy, & Martin, 1992; NICHD Early Child Care Research Network, 2000b, 2002a, 2005d, 2005h; Peisner-Feinberg et al., 2001; Sims, Guilfoyle, & Parry, 2005, 2006). Studies that examined classroom practices using the Early Childhood Environmental Rating Scale – Revised (ECERS-R) (Harms & Clifford, 1980; Harms, Clifford, & Cryer, 1998) suggested that observed classroom practices were related to children’s language and academic skills at 4-8 years of age (Peisner-Feinberg et al., 2001). Another study in US that measured overall classroom quality using the Infant/Toddler Environment Rating Scale-ITERS (Harms, Cryer, & Clifford, 1990) also showed that the ITERS score was significantly associated with infant’s cognitive development (Burchinal et al., 1996). Taken together, these findings suggested that high overall classroom quality during infancy and preschool age can lead to better cognitive development.

Other research that has examined the process feature of caregivers’ interactions has suggested that the closeness of the caregivers and child relationship (measured by Student-

Teacher Relationship Scale – STRS; (Pianta, 1992) was related to both cognitive and social skills at 4-8 years old, with the strongest implications being for social outcomes (Peisner-Feinberg et al., 2001). Studies that investigated the effect of positive interactions as measured by the Observational Record of the Caregiving Environment –ORCE (NICHD Early Child Care Research Network, 1996, 2002a) suggested that more positive caregiving significantly is related to better or higher social competence and fewer social problems at 24 and 36 months as well as better linguistic, cognitive, and pre-academic functioning at 15, 24, 26 and 54 months (NICHD Early Child Care Research Network, 1998a, 2000b, 2002a). Recent studies in Australia that have examined the relationship between the levels of cortisol reactivity (i.e., that regulates stress) and quality features (characterised as the relationship between child and caregivers and caregivers and families) have shown that classrooms that were rated as high quality (i.e., more positive relationships between caregivers and children) were found to be associated with lower levels of cortisol reactivity in children (Sims et al., 2005, 2006).

(a) Effects of Quality Child Care on Child Cognitive Development

There is some evidence to suggest that the quality of child care can have a significant effect on children’s cognitive developmental outcomes (Andersson, 1989, 1992; Belsky et al., 2007; Burchinal & Cryer, 2003; Burchinal et al., 1996; Harrison & Ungerer, 2000; NICHD Early Child Care Research Network, 2000b, 2002a, 2005d, 2005f, 2005h, 2005j; Peisner-Feinberg et al., 2001), although there are some exceptions (Ackerman-Ross & Khana, 1989; Broberg et al., 1990). Studies in US and Sweden have indicated that these positive influences occur as a result of the quality of interactions between caregivers and children, developmentally appropriate material, practices and activities design in the classroom and the amount of language stimulation provided to children (Bredenkamp &

Copple, 1997; Broberg et al., 1997; Burchinal & Cryer, 2003; Burchinal et al., 1996; Burchinal et al., 2000a; McCartney, 1984).

Although studies vary in how they define and discuss ‘quality care’ and ‘quality interactions’, there are many commonly reported measures. Effective interactions between care-givers and children typically involve sensitive and responsive communication (e.g., caregivers and children taking turn in their conversations), shared activity times, displays of affection, consistent and predictable responses and boundaries, as well as positive reinforcement for appropriate behaviour. In particular, when caregivers and children undertake activities together, the guidance from the caregivers can contribute to new knowledge that children accommodate into their existing store of knowledge and which can elevate to new levels of cognitive ability. For example, a study in Sweden indicated that children who experienced more sensitive adult-child interactions scored higher on verbal abilities at 8 years old (Broberg et al., 1997). Similarly, a secondary data analysis study in US conducted using different ethnic groups found that sensitive and stimulating interactions between caregivers and children was significantly associated with higher language scores and greater school readiness (Burchinal & Cryer, 2003).

The quality of developmentally appropriate material, practices and activities provided to children can also have positive effect on children’s developmental outcomes. When toddlers see poster and hear a song of the alphabet and numbers in their classroom, such children are more likely to be familiar with the alphabet as well as numbers when they grow up. Another benefit of developmentally appropriate material, practices and activities, is that they can have a significant effect on children’s motivation to learn because children are likely to enjoy instructions that stimulate their thinking, meets their developmental

needs, and allows them to actively participate in the class activities. In turn, children who are more responsive to learning will be considered more cognitively and emotionally productive and caregivers will continue to invest increasing amounts of time in these educational activities. A longitudinal study on former students of the Head Start programme in US has shown that children who received receive more developmentally appropriate instruction from their teachers scored higher on logical-scientific-math measures than children who receive medium and low developmentally appropriate practices (Stafford, van Rensburg, & Greene, 2000).

Another characteristic of quality child care that is associated with positive children's cognitive development is the verbal interaction between caregivers and children. Language stimulation that involves asking and answering questions, which is responsive to children's vocalizations have been shown to enhance children's vocabulary and communication skills. Studies in US have highlighted the benefits of effective language stimulation in measures taken at 12 months of age (Burchinal et al., 1996); at 24 months (NICHD Early Child Care Research Network, 2005d, 2005p); at 36 months (Burchinal et al., 2002; McCartney, 1984); and kindergarten (NICHD Early Child Care Research Network, 2003c, 2005o). Indeed, the NICHD studies conducted in the USA (NICHD Early Child Care Research Network, 2003c, 2005o) concluded that the more language stimulation provided to children by caregivers, the higher the score that children achieved in cognitive and language measures.

The enduring nature of these effects has been borne out in longitudinal studies (Belsky et al., 2007; NICHD Early Child Care Research Network, 2005o, 2005p; Peisner-Feinberg et al., 2001), although certain other factors often need to be taken into account for

these longer-term effects to be achieved (i.e. 54 months and above). First, the quality child care that children experience should be improving rather than diminishing. Second, the quality of child care experienced when children are very young (i.e. in the first three years of life) has a potentially greater influence on children's development at a later age (NICHD Early Child Care Research Network, 2005a). This suggests that exposing children to high quality child care from the outset, or having it improve over time is necessary for sustained improvements in language performance.

Although the above studies showed that high quality care can have a positive influence on cognitive outcomes, there are other studies that have not been able to replicate these effects (Ackerman-Ross & Khana, 1989; Broberg et al., 1990). It is thought that the inconsistent results may be due to differences in the methodologies used in these studies and therefore the findings could not be taken as evidence that quality child care has no effect on child cognitive development without considering family factors such as quality home environment. Participating children in Ackerman-Ross and Khanna (1989) study were from middle income families in America and had parents who reported highly stimulating home environments, particularly in relation to language. This may have led to less variability in the nature of parenting reporting (i.e., an attenuation of the range of scores) so that significant effects may have been more difficult to obtain.

Similarly, a Swedish study by Broberg et al. (1990) has found no relationship between exposure to high quality child care and child cognitive abilities at 28 and 40 months even after controlling for the type and characteristics of the child-care service. One possibility is that children spend only an average of 30 hours in a week in child care and spend the rest of their daily waking hours with parents at home. If children spend a large

number of hours in homes that provide an intellectually stimulating environment, there is a greater likelihood that Swedish children's cognitive development at pre-school will be as much a function of their experiences at home as in child care.

In contrast, other studies that have obtained positive results involved children drawn from families with different levels of income (usually the majority of participants have been from low incomes families) (Burchinal & Cryer, 2003; Burchinal et al., 2000b; Burchinal et al., 2000a) and their parents reported various levels of home quality. Moreover, many of the studies that have reported positive effects have often involved specific programmes such as the Head Start program in the USA (Barnett, 1995; Zigler & Styfco, 1993). Children who participated in these programmes were from disadvantaged families and often received less stimulation from their parents. Thus, it may be that the benefits of child care will be greater for children who come from families that reported less cognitive and language stimulation than children whose families reported consistently high levels of cognitive and language stimulation.

Although most of the studies described so far indicate that all children can potentially benefit from quality child care, in particular when their family provides lower levels of cognitive and language stimulation, research has also shown that the strength of the effect could be moderated by other family factors such as the level of maternal education and the family's ethnicity. For example, Peisner-Feinberg et al. (2001) found that the positive effect of high quality care on children's cognitive and language skills is stronger for children born of mothers with lower levels of education than those with higher levels of education. Similarly, Burchinal et al. (2000b) found that the effect of child care quality on child language development is more significant for children of African-

American background than those who are White non-Hispanic. In addition, studies that have examined the effects of income or socio-economic status have found that high quality child care may be differentially beneficial to children from lower income families (Caughy, DiPietro, & Strobino, 1994). Such familial background factors were not, however, obtained in the NICHD findings (NICHD Early Child Care Research Network, 2000b, 2003c, 2005o, 2005p). Instead, the NICHD studies that were based on large sample-sizes tracked from birth to school age and which controlled for child, family and child care factors concluded that the benefits of quality child care on cognitive and language development tend to be equally observed in children irrespective of their backgrounds.

In summary, these studies suggest that high quality child care can have a positive effect on children's cognitive and language development, although this benefit can either occur directly or indirectly. On one hand, having good quality interactions with children (a process factor) and smaller group sizes and staff ratios (structural factors) can have direct influences on children's abilities, especially when parenting involves sensitive and responsive caregiving particularly in families where there are fewer children per adult (e.g., personal conversation between parents and child). On the other hand, benefits can also occur in others ways (indirectly). For example, the provision of assistance to disadvantaged families to enrol their children early into high quality care can set the conditions that make these children more likely to be exposed to positive experiences necessary for them to achieve better long-term outcomes.

(b) Effects of Quality Child Care on Child Social Development

Many studies also have been conducted to examine the effect of quality child care on children's social development. These studies have consistently shown that quality child

care can influence children's social developmental outcomes, although different results appear to be obtained depending upon whether infants or older children (24, 36 months and older ages) are considered in the study. Studies conducted in the USA, Australia, and Israel that have examined the effects of quality care on infant attachment behaviour has generally yielded inconsistent results (Harrison & Ungerer, 1997; NICHD Early Child Care Research Network, 1997c; Oppenheim, Sagi, & Lamb, 1988; Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002), whereas studies involving toddlers, preschool and kindergarten children which come mainly from the USA, have tended to report more positive results (Howes, 1990; NICHD Early Child Care Research Network, 1998a, 2001).

An example of an infant study that obtained positive results was conducted in Israel by Sagi et al. (2002). The study indicated that the high number of children per adult in Israel public child care centres (average 7:1) combined with the lower caregiver qualifications and larger group sizes was found to be associated with more insecure attachment behaviour in Israel infants (Sagi et al., 2002) as compared with higher standard private centres with the reverse characteristics. In a similar vein, research in Australia (Harrison, 1997) suggested that quality child care (based on types of child care) has some effect on infant attachment. Those infants who were exposed to informal care were more likely to develop insecure attachments than infants who used formal regulated child care (Harrison & Ungerer, 1997) subject to formal standards imposed by the National Child care Accreditation Council Inc. On the other hand, the NICHD study that examined the effect of quality care (i.e. positive caregiving) on infant socio-emotional development obtained more complex findings. The quality of child care did not directly predict infant secure attachment behaviour (NICHD Early Child Care Research Network, 1997c, 2005n), but

insecure attachment would result if children came from families where there was lower maternal sensitivity and responsiveness.

As with the NICHD study, the Israeli researchers also controlled for an extensive number of child and family factors (including maternal sensitivity) when examining the effect of quality of care on infants' attachment behaviour, although they reached different conclusions. The NICHD study indicated that family factors (i.e. maternal sensitivity and responsiveness) were the best predictors of infant attachment behaviour (NICHD Early Child Care Research Network, 2005n), whereas the Israeli study (Sagi et al., 2002) found that the most influential factor was the number of children per adult in the child care centre. As discussed previously, a methodological reason for this inconsistency (i.e., why structural factors proved important in this Israeli study but not in the US study) is that there appears to be greater variability in Israeli child care. The number of children per adult in Israel public child care centres is high (7:1) as compared with the standards prevailing in other countries and this may be sufficient to result in insecure attachment behaviour in some infants. Similar issues may apply in Australia if children attend unregulated (or informal) child care that has not been monitored by any authority.

In addition to studies examining the effects of quality child care on infant attachment, studies have also examined the effect of quality on social behaviours in older children. Most of these studies have tended to yield more positive results. For example, the NICHD study found that quality, as measured by the ORCE, predicted higher social competence and lower social problems at 24 and 36 months as rated by mothers and caregivers respectively (NICHD Early Child Care Research Network, 1998a, 2005i). Similar findings were obtained in an Australian study that examined the association

between formal and informal child care on observed children's peer competence at 2.5. The results showed that children who had attended formal care were more likely to be rated by caregivers as having more peer competence compared to children who attend informal care (Harrison & Ungerer, 2000). Another study by Howes et al. (1992) involving older children (aged 4.5 years) also found that the quality of early child care received from birth up to this age (as measured by composite of ratio, stability, and training) also predicted more positive relationships with peers in kindergarten. This finding confirmed the NICHD findings that children who attend quality care were more competent than children who attend low quality care at 54 months as rated by care-givers in the centres (NICHD Early Child Care Research Network, 2003c). Further, research among adolescence also has indicated that attending quality child care at an early age can have beneficial effects on Swedish children's socio-emotional development at 13 years of age.

These effects may result from the exposure to care environments with more structured and developmentally beneficial activities and interactions between care-givers and children. For example, if infants experience less sensitive and responsive interactions with caregivers, they are more likely develop insecure attachment with adults and this experience could affect subsequent aggressive and non-compliance behaviour during preschool and early school-age years (Belsky, 1988). If care-givers are better trained and educated, they are more likely to encourage socially appropriate and effective behaviours (NICHD Early Child Care Research Network, 2005c; Phillips, Scarr, & McCartney, 1987). Children will be more likely to develop a sense of competency with their peers and adults (NICHD Early Child Care Research Network, 2005f; Phillips et al., 1987).

As was also often found in the studies that included measures of cognitive development and language, it has been observed that the effect of child care experiences may also have longer-term benefits on children's social development at school age (i.e., 8, 11 and 15 years old) (Andersson, 1989, 1992; Belsky et al., 2007; Campbell et al., 2000; Peisner-Feinberg et al., 2001). Children with quality child care experiences have been found to have more friends and were rated by parents as more popular and less aggressive at seven years of age (Field, 1991). These findings were not, however, observed as clearly in the NICHD study which found that the strength of the effect may also be influenced by family factors.

3.4 Part III: Family and Children's Development

Part I and Part II examined research that has investigated the link between the quantity and quality of child and children's development. As indicated in Part I and Part II, there is evidence to suggest that family factors can have a significant influence on the relationship between child care (i.e., quality and quantity) and child developmental outcomes. Therefore, this section (i.e., Part III) attempts to discuss the role of the family on the development of children in child care in more detail. The discussion in this section is divided into two sections. One section examines the role of family factors as predictors of the characteristics of child care (i.e. age of entry, quantity, quality and type of care). Another section examines the relationship between these family characteristics and developmental outcomes.

(a) Family Variables and Child Care Characteristics

A number of studies have examined the association between family factors and children's experience with child-care (Early & Burchinal, 2001; Harrison & Ungerer, 2005; Huston, Chang, & Gennetian, 2002; NICHD Early Child Care Research Network, 1997b, 2005b; Sylva et al., 2007). These studies have shown that family socio-demographic background (parent incomes, education and ethnicity), children's characteristics (sex, age and temperament) and psychological characteristics (e.g., maternal attitude and personality, family values and preference) appear to be related to the age at which children enter child care, the type of care received and the quantity of care.

With respect to socio-economic status, it has been found that family income is associated with the age of entry to child care. Mothers are more likely to enrol their children into child care at three months of age or earlier when families require mothers to work in order to support for family expenses. By contrast, children are more likely to enter care later (namely, between 3-10 months of age) when the family is less seriously in need of maternal income. For example, NICHD (1997b) found that children are more likely to enter child care between 0-2 months of age when the non-maternal income is low, whereas children began child care between three and five months age when the overall family income is high and after 15 months when non-maternal income is relatively high. Similarly, research in the UK also has suggested that families that have low socio-demographic background (i.e., include lower levels of education, lower occupational status and income) are likely to enrol their children early (at 0-3 months) (Sylva et al., 2007). Thus, various measures of socio-economic status appear to be significantly related to how early children enter child care.

Family characteristics (e.g., parental attitudes and employment status) have also been found to be related to how much time children spend in child care. For example, mothers who believe that maternal employment has no risk for their children are likely to use child care longer than mothers who feel otherwise (NICHD Early Child Care Research Network, 2005k; Sylva et al., 2007). Part-time working mothers also use child care less intensively than full-time working mothers. On the other hand, to make the issue more complicated, high maternal income has also been found to be associated with high amounts of child care, whereas high non-maternal income was associated to less use of child care (NICHD Early Child Care Research Network, 2005k). In other words, the results suggested that women with successful careers who are working full-time and earning good incomes are less likely to relinquish their work, whereas women might be willing to sacrifice some of their work time and look after their children themselves if their partners have higher incomes.

Family variables are also related to the type of child care that parents choose for their children. The variables include: geographical location (Atkinson, 1994; Harrison & Ungerer, 2005), family income (Harrison & Ungerer, 2005; Qu & Wise, 2004), ethnicity (Early & Burchinal, 2001; Fuller, Holloway, & Liang, 1996), and parental factors (i.e. child rearing beliefs, psychosocial factors, parental practices and preferred values) (Early & Burchinal, 2001; Fuller et al., 1996; Liang, Fuller, & Singer, 2000; NICHD Early Child Care Research Network, 1997b).

With respect to family income and the type of care, it has been found in a study conducted in US that families that have high maternal and non-maternal incomes are likely

to use in-home care provided by unrelated caregivers for their infants rather than rely on fathers or assistance from other relatives (NICHD Early Child Care Research Network, 1997b). Another study that was also conducted in US has shown that less socio-economically advantaged families are more likely to rely upon care provided by fathers, whereas more well-off families are more likely to use child care centres (CCCs) (Early & Burchinal, 2001). Similar findings have been reported in research conducted in Australia. Harrison and Ungerer (2005) found that high income families are more likely than low income families to use formal care (i.e. CCC and FDC) for their infants. Also, a study in the UK indicated that high income families are likely to use formal care institutions (nursery or nanny) than childminders and friends (Sylva et al., 2007).

Although the research findings from different countries (US, UK, and Australia) suggested that families with a low income were less likely using formal child care arrangements, there are studies conducted among Black American that indicated very low income families tend to use centre cares more often than any other form of care (Fuller, Holloway, & Liang, 1995; Fuller et al., 1996; Hofferth, Brayfield, Deich, & Holcomb, 1991). The findings could be attributable to the availability of child care subsidies and accessibility to child care centre for poor families.

In addition to family income, ethnicity and maternal education have also been found to be associated with the type of child care chosen. Better educated mothers are more likely to use in-home care for their infants (Erdwins & Buffardi, 1994; NICHD Early Child Care Research Network, 2005k) and child care centre (CCC) for their preschool aged children (Fuller et al., 1995). A possible reason for this is those educated mothers are more interested in child care centre for their preschool aged children because of the potential

educational benefits. For example, many good quality child care centres usually incorporate early childhood education programs that attempt to stimulate children's development through especially tailored activities.

The role of ethnicity has proved to be complicated because many of the significant associations between high maternal education and use of child care centre have not always been replicated across different ethnic groups. The association is likely to be detected in studies involving White American families, but not necessarily in studies involving mothers from other ethnic groups (e.g., African and Latino families). Studies have shown, for example, that maternal education does not appear to be associated with the selection of child care arrangements in African-American families. Both high and low educated mothers of African-American families are likely to select child care centres for their preschoolers (4-5 years old) even after studies have controlled for family income (Fuller et al., 1996). The findings could be attributable to the fact that child care subsidies are allocated to the lowest-income non-White families and also higher incidence of centre-based child care in the dominant Black communities (Fuller et al., 1996). Due to the availability of child care subsidies and many child care centres in their residential areas, African-American mothers regardless of educational background will take these opportunities to send their children to child care centre.

Access to quality child care (i.e., which meets formal standards) also appears to be related to family factors although, in the USA, the relationship between family income and quality child care appears to curvilinear rather than linear (NICHD Early Child Care Research Network, 1997b; Phillips et al., 2006). High quality child care is experienced by the children from the highest and lowest income families, while low quality child care is

experienced by low to middle income families. This phenomenon occurs because only the highest income families can afford to pay high fees for quality child care and the poorest families in the United States receive child care subsidies but use high quality child care centres provided as part of the Early Childhood Intervention Program. Parents who are above the poverty threshold are not eligible for subsidies or funded child care program usually send their children to less expensive child care centres or to relatives or friends. Thus, the curvilinear relationship between income and quality is only relevant to child care centres. The relationship between income and home-based child care is linear. Children of high income families experience quality home care while children of low income families experience low quality home care. For example, studies that have considered in-home care as provided by unrelated caregivers for infants born to high income families, showed that there was a significant relationship between family income and frequency of positive caregiving and Child Care HOME scores (NICHD Early Child Care Research Network, 2005k).

The use of quality child care has also been found to be related to maternal childrearing attitudes. In particular, mothers who have non-authoritarian childrearing beliefs are more likely to select a child care arrangement that is of high quality. For example, they tend to select in-home care for their infants and data analyses indicated that children used this type of child care experienced higher quality child care than other types of child care (NICHD Early Child Care Research Network, 2005k).

In summary, there is reasonably consistent evidence that family characteristics are significantly associated with the age of entry into child care, the type of care chosen, the quality of care and how much time children spent in child care. These findings underscore

the importance of taking family variables into account when conducting research to examine the effect of broader factors (e.g., the structure, quality and amount of care received) on child-related outcomes.

(b) Family as a Significant Predictor of Child Developmental Outcomes

As discussed briefly in previous sections, there is considerable evidence to suggest that family background can play a significant role in influencing how children respond to child care. Even when children start child care early and spend extensive amount of hours during a week, the effect of this experience will often depend on the child's family background. The NICHD studies, which have analysed a large number of family variables at different stages of child development (i.e. 12, 24, 36, and 54 months) and controlled for a list of child care variables have concluded that: (1) family variables are often more significant predictors than the characteristics of the child care itself in predicting child developmental outcomes; and (2) when both child care and family factors were significant, family variables always displayed stronger effects than the quality or quantity of child care (NICHD Early Child Care Research Network, 1997c, 1998b, 2000b, 2000c, 2005l, 2005m). A contrary view, articulated in a number of studies described below, is that early and extensive experience in child care can attenuate the influence of family background factors rather than the other way around (Dunham & Dunham, 1992; Egeland & Heister, 1995; Howes, 1990; Jaeger & Weinraub, 1990; Oppenheim et al., 1988).

Many studies have been undertaken to investigate the role of family background on children's developmental outcomes and especially for children who attend child care. Studies that have compared language performance between children raised at home and child care have indicated that the amount of language stimulation provided by parents as

well as parental education levels were significantly related to children's language performance at three years old (Ackerman-Ross & Khana, 1989). Similarly, a UK study indicated that the infant's cognitive abilities depend on the level of maternal education and not the type of care (Melhuish et al., 1990b). In addition, a longitudinal study on pre-school education in the UK has suggested that the quality of home learning environment was a significant predictor of child cognitive and social development at five years old (Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2004c). Similar findings have been reported in Swedish research. For example, Broberg et al. (1990) found the amount of cognitive stimulation provided at home predicted children's verbal abilities at three years of age more strongly than their experiences in child care. Similarly, in Australia, it has been found that the relationship between children's scores in language and communication abilities tests under three years of age depends on maternal education. Children who attended multiple child care centres were likely to score higher on language and communication tests when they had mothers with higher levels of education (Bowes et al., 2003).

The effects described also emerge in studies where more thorough attempts are made to control for the nature of the child care received (e.g., its quality, quantity and timing) (NICHD Early Child Care Research Network, 2005l, 2005m). NICHD studies conducted in America consistently showed that maternal vocabulary, cognitive stimulation, experiential experiences at home and quality parenting are significantly related to children's cognitive and language development at 36 and 54 months (NICHD Early Child Care Research Network, 2000b, 2002a, 2005m) after controlling for child care characteristics.

Studies also have suggested that family variables can have a significant impact on the social development of children in child care. NICHD studies that controlled child care characteristics and examined a range of family variables including demographic variables, maternal personality and child rearing attitudes and infant-mother interaction, reported that: (1) maternal responsiveness and sensitivity significantly predicted infants' secure behaviour at 15 months (NICHD Early Child Care Research Network, 1997c); (2) maternal psychological adjustment was associated with children's compliance and self-control and behavioural problems at 24 and 36 months age (NICHD Early Child Care Research Network, 1998a). Mothers who have better psychological functioning are more likely to interact with their children and tend to behave in a more sensitive manner, and this has been found to foster more compliance and less behaviour problems in children; (3) Sensitive parenting was found to be linked with peer competence at two and three years old (NICHD Early Child Care Research Network, 2001); social skills and less problem behaviour at 54 months and kindergarten age (NICHD Early Child Care Research Network, 2003c, 2005m). In addition, Harrison and Ungerer (1997) suggested that children who scored higher in secure attachment have mothers who were more educated and older than children who scored lower on measures of secure attachment. Taken together, these studies suggested that, regardless of the type of care (maternal or non-maternal care), family factors can have a significant influence on children's social development.

Associations of this nature have not, however, been obtained in all studies. For example, in a study by Howes (1990), parents who started early child care for their infants (i.e. before 12 months) appeared to have less predictive influence on their children's cognitive and social development at preschool and Kindergarten age than children who were reared at home (Howes, 1990). Another study found that maternal cognitive

stimulation has little influence on child cognitive development measured at 13 and 24 months of age. Children who were nurtured at home and groups of children nurtured in child care received similar levels of cognitive stimulation and there was no relationship between the level of cognitive development of the children in child care and the level of cognitive stimulation provided by their mothers (Dunham & Dunham, 1992).

Similarly, a study that investigated the role of child care on child social development revealed that, in comparison between insecure children reared at home and child care, insecure children who attended early child care were rated as less socially withdrawn and had higher self-esteem at four years old (kindergarten age) and were more socially involved in the first grade (Egeland & Heister, 1995). In a similar vein, a study in Israel that also examined the influence of infant secure attachment behaviour on children's socio-emotional development at five years old, found that the strength of early social relationships with caregivers rather than parents was more predictive of children's socio-emotional outcomes at five years of age (Oppenheim et al., 1988). Such studies suggest that, in some situations where children spend more time in child care from an early age, child care may play a more significant role than family factors on child development.

3.5 Conceptual and Theoretical Framework Governing Research Project

The research reviewed in this chapter suggests that the relationship between child care experiences and child development is likely to be complex. In general, child care *per se* does not appear to have a detrimental or positive effect on children. Instead, the effect appears to vary in relation to the quality of child care provided, the time spent in child care and the characteristics of family from which children originate. For example, African

American children who attend high quality child care (i.e., child care meets the recommended professional criteria for structural features and sensitive caregivers-child interactions) appear to benefit from child care in the form of improved scores on measures of cognitive and language ability (Burchinal et al., 2000b; Burchinal et al., 1996). In contrast, White American children from middle income family who attended child care that meets recommended professional criteria were less likely to show any language benefits resulting from their child care experiences (Ackerman-Ross & Khana, 1989). Figure 3.1 summarizes the discussion in this chapter on the relationship between child care (in particular, quality and quantity) and child development. Figure 3.1 presents a theoretical framework for this research that is built on the findings of the review of previous studies described in this chapter.

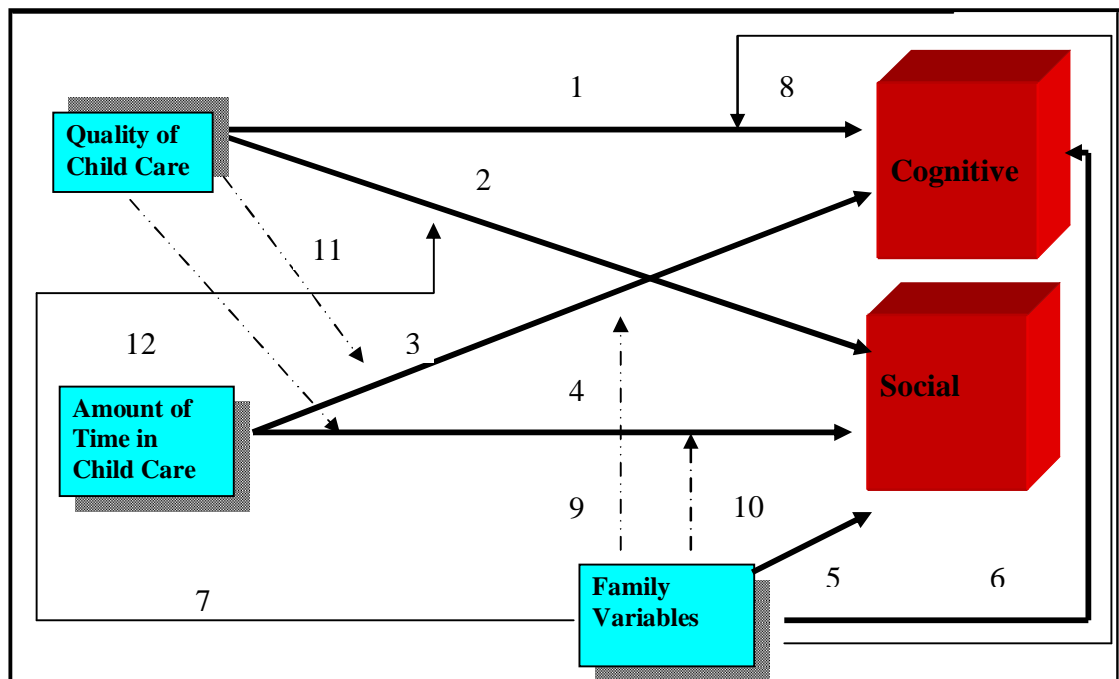


Figure 3.1: Summary of the Relationships between Child Care and Child Development

Figure 3.1 highlights the findings from studies that have investigated the relationship between child care and child development and indicated that the quality of

child care can have a significant effect on children's cognitive and social development (see path 1 and path 2 in Figure 3.1) (Andersson, 1989, 1992; Broberg et al., 1997; Burchinal et al., 2000b; Caughy et al., 1994; Harrison & Ungerer, 2000; Howes, 1990; Howes et al., 1992; Love et al., 2003; McCartney, 1984; NICHD Early Child Care Research Network, 2005g; Peisner-Feinberg et al., 2001; Sagi et al., 2002; Sylva et al., 2003). In general, children who experience quality child care have greater cognitive and social development than children who experience low quality child care. However, the predictive effect of quality on child cognitive development is more consistent than the predictive effect of quality on child social development. At the same time, although some studies have shown that quality care does not always have a significant influence on child social development, it is nonetheless important for social factors to remain a component of investigations in this area of research.

For this reason, the present study was designed to investigate the effect of quality child care on developmental outcomes of Australian children. Different features of quality child care (overall classroom quality, structural features, caregivers-child interaction, caregivers' mental health and job satisfaction) examined separately in three field studies (Study I, Study II and Study III). It was hypothesised that different features of quality child care would influence children's cognitive and social development, as depicted by path 1 and path 2 in Figure 3.1.

In contrast to the more consistent findings relating to child care quality, the evidence supporting a relationship between the amount of time children spend in child care and development is less consistent (Bowes et al., 2003; NICHD Early Child Care Research Network, 2000b, 2005d). Children who enrol full-time in child care centres do not

necessarily develop better cognitive skills to those children who attend on a part-time basis. The effect of quantity of care may instead be related to the quality of child care provided. Children who spend high amount of time in quality child care have better cognitive outcomes than children who spent a high amount of time but in low quality child care. However, the effect appears to vary depending upon the time available for children to settle in or adapt to child care. Specifically, studies show that it is the number of months that children have spent in child care, particularly before the age of three years, significantly influences their cognitive development (see path 3) (Broberg et al., 1997; Sylva et al., 2003). The more months children are in child care before three years old, the better their cognitive development. Similarly strong effects are not, however, observed for social development (see path 4). Spending large amounts of time in child care from infancy to kindergarten significantly predicted behaviour problems and low social competency at toddlerhood, preschool age and kindergarten according to mothers' and/or caregivers' ratings (Harrison & Ungerer, 2000; NICHD Early Child Care Research Network, 2005h, 2005i, 2005o). Such effects appear more likely to be detected when studies have examined the number of hours that children spend per week in child care.

Given this evidence, this research project was designed to investigate the effect of different measures of time (i.e. day(s) per week; hours per day; hours per week; number of months and total hours) in child care on children's developmental outcomes. It was predicted that the different measures of time that were investigated in this research (through Study I, Study II, and Study III) may have different effects on child developmental outcomes (see path 3 and path 4). The number of months in care would predict more positive outcomes, whereas the number of hours per week, more negative outcomes with stronger effects observed for cognitive as opposed to social development.

Family factors (i.e. demographic characteristics, parenting practices, socio-economic status, and maternal attitudes) are significantly associated with children's experience with child care (Huston et al., 2002; NICHD Early Child Care Research Network, 2005k; Sylva et al., 2007). Family characteristics also reliably predict the type of care, quality and quantity of care and the age of entry into child care. Families also play a major role in their children's cognitive and social development. Although several studies have downplayed the role of parents in children's development in preference for child care factors (Dunham & Dunham, 1992; Egeland & Heister, 1995; Howes, 1990; Jaeger & Weinraub, 1990; Oppenheim et al., 1988), other studies have consistently indicated that family is a significant predictor of child cognitive and social development for children reared at home as well as in child care (paths 5 and 6) (Broberg et al., 1990; NICHD Early Child Care Research Network, 2005l, 2005m). For example, maternal education as well as paternal education has been found to be significantly associated with child cognitive and language development (Ackerman-Ross & Khana, 1989; Bowes et al., 2003; Melhuish et al., 1990b). However, new research has suggested that a home learning environment that supports cognitive development is more significant than parental education in influencing child cognition (Sylva et al., 2003). Furthermore, studies that have controlled for child and child care factors, discovered that maternal vocabulary, cognitive stimulation, experiential experiences and quality parenting significantly predicted children's development (NICHD Early Child Care Research Network, 2000b, 2002a, 2005l, 2005m). Similarly, family factors also significantly predict child social developmental outcomes. Maternal sensitivity and responsiveness, maternal psychological adjustment, sensitive parenting significantly influenced the likelihood of infants developing secure attachment behaviour, and is related

to children's social competence, self-controlled and behaviour problems (NICHD Early Child Care Research Network, 2002a, 2005i).

This previous research formed the basis for including a detailed analysis of family variables in the current research project. In this study, several new family variables (i.e. family social environment, dysfunctional parenting practices and parental mental health status) are explored to investigate whether these variables affect the developmental outcomes of children in child care. It was hypothesised that these new investigated family variables would have a significant association with both cognitive and social developmental outcomes (same as path 5 and path 6).

Most studies, including the NICHD studies, have not investigated whether family variables might moderate the relationship between the quality and quantity of care and child developmental outcomes, except in one analysis that showed that quality child care was significantly more important for infants who experienced low maternal sensitivity at home. Attending high quality child care was found to attenuate the negative effect of low maternal sensitivity on infant secure attachment behaviour (path 7) (NICHD Early Child Care Research Network, 1997c, 2005n). Other research has found that quality child care is significantly more important for children whose families were on low incomes (Caughy et al., 1994), in families where there is low maternal education (Peisner-Feinberg et al., 2001) and in families from African-American backgrounds (Burchinal et al., 2000b) (path 8).

A final component of this research, therefore, was to examine the possibly moderating effect of family on the relationship between time spent in child care and child development (path 7-10). Moreover, this research also looked at the effects of different

measures of time on child development as a role of quality child care (new paths – path 11 and path 12). It was predicted that the effect of different amounts of time in child will vary as a function of family related variables (i.e., family social environment, dysfunctional parenting practices and parental mental health status) and the quality child care (i.e., overall classroom quality, structural features, caregivers interactions, mental health status and job satisfaction).

3.6 Summary of Thesis Aims

In summary, this research was designed to extend the existing literature by exploring new aspects of child care factors that are assumed to have a significant influence on child development. First, instead of examining only the average hours of child care per week that have been suggested as impacting on child development (particularly the social domain), this research investigates different measures of time spent in child care that are assumed to influence child development. Second, this research aims to explore the effect of quality child care (means child care that meets recommended professional criteria for structural features that include small group size and high score for process features that measured via overall classroom quality by using ECERS-R scale and caregivers-child interaction by Caregiver Interaction scale) on child developmental outcomes. Although many studies have investigated the effect of structural and process features of child care on child development, this research is unique in that it also evaluates the structural and process features of child care in Australia. The paucity of studies on the impact of classrooms that received Australian government accreditation (i.e., QIAS -Quality Improvement and Accreditation System) or structural child care features (ratio, group size and caregiver qualification) on child development in South Australia has motivated this research. The

project considers whether both standardized national accredited classrooms and unstandardized structural quality features affect child development similarly or one feature of quality care is more predictive than others. Also, included in this research is an examination of new caretaker's related variables that are assumed to have associations with quality care provided by caregivers which are caregivers' mental health status measured by GHQ-12 and job satisfaction assessed by using Job Satisfaction Survey. Third, this research attempts to discover if new family variables play a significant role in the developmental outcomes of children who are in child care. Fourth, this research will discuss whether the effects of different measures of time vary as a function of family variables and quality child care. These specific themes will be discussed in detail in the empirically-based Study I, Study II and Study III.

Chapter 4: Study 1

4.1. Aims and Introduction

Based on the findings reviewed in Chapters 1-3, a first study was designed to investigate the effect of different measures of amount of time in child care on child developmental outcomes. It was expected that a higher number of hours per week (HPW) in child care would be associated with lower scores on measures of social behaviour, whereas more months in child care would be positively related to children's cognitive development. It was also expected that overall classroom quality (i.e., as indicated by various components of the ECERS-R scale) would be associated with more positive outcomes on measures of cognitive and social development. A third hypothesis was that a child's family background would be associated with child developmental outcomes. In particular, in line with previous research findings, it was expected that greater family conflict would have a negative effect on child social development, particularly on social behaviour.

Finally, it was expected that the relationship between the amount of time spent in care (months or hours per week) and child developmental outcomes would be moderated by classroom quality and family background. That is, children who spend a high amount of time (either days in a week, hours in a day, hours in a week, number of months in child care or total hours in child care) in child care centres that are rated high in overall classroom quality (using ECERS-R scale) would score higher in measures of verbal ability and social behaviour. Similarly, in relation to family factors, it was expected that spending greater amounts of time (in months or hours per week) in child care would not be associated with

differential developmental outcomes if children came from families that reported higher levels of family conflict. Such children, it was predicted, would have more behavioural problems than those who come from families where there was little conflict so that the effects of child care would be harder to discern (Harden et al., 2000; Koblinsky, Kuvalanka, & Randolph, 2006; Ramos, Guerin, Gottfried, Bathrust, & Oliver, 2005).

4.2. Research Project

This research comprises three studies labelled Study I, Study II, and Study III. Prior to Study I a pilot study was conducted to examine the feasibility of using the measures proposed as well as the availability of relevant data from child care centres. After an analysis of results from the pilot study was conducted and measures were modified, Study I started in October and was completed in December, 2005.

4.2.1. Pilot Study

The two centres participating in the pilot study were located in low and middle socio-economic areas. The centres provide child care services for children aged 0-5 years old. The criteria of participated children in this Pilot Study are: children must aged between 2 – 5 years old and cognitively normal. All parents from both centres who have children belongs to this group of age were invited to participate in Pilot Study. However, only twenty-three children were drawn from these centres. Fifteen participants were from the child care centre in the middle socio-economic area and eight participants were from the child care centre in the low socio-economic area (Table 4.1). Altogether, participated children aged between 2 – 3.8 years old ($M = 3.1$ years old, $SD = .50$). Some modifications were made to the study procedures and protocols in light of the pilot study findings. For

example, instead of administering all cognitive ability subtests that appeared to be too long for very young children, this research focused on verbal ability, which has only two subtests that take less than 15 minutes to complete.

Table 4.1

Socio-Economic Area (SEA) and participants in the Pilot Study

Variable	No. of centres	No. of children	Percent
Low SEA	1	8	35
Middle SEA	1	15	65
High SEA	0	0	0
Total	2	23	100

After making these changes and modifications, the researcher recruited new participants and increased the number of centres for Study I. Thirty-three centres were approached by the researcher and, of these, 18 centres agreed to participate (54.5 % participation rate). Of these 18 centres, seven were from high socio-economic areas, seven from middle-socio-economic areas and four from low socio-economic areas. Although the researcher had approached equal numbers of child care centres from different socio-economic areas (i.e., 11 child care centres from each socio-economic area) as based upon the Australian Bureau of Statistics SEIFA index, the numbers of participating child care centres from low socio-economic areas was lower (only 4 from 11 invited). Across all 18 centres, 147 parents agreed to participate and gave consent for their children to be involved. However, only 131 parents completed and returned the questionnaires (Table 4.2). The

other 16 parents did not respond and complete the questionnaire, although the researcher had sent two reminder letters asking them to complete and return it.

Table 4.2

Socio-Economic Area (SEA) and participants in Study I

Variable	No. of centres	No. of children	Percent
Low SEA	4	17	12
Middle SEA	7	62	42
High SEA	7	68	46
Total	18	147	100

4.2.2. Participants for Study 1

The study involved 61 boys (46.6%) and 70 girls (53.4%) aged between 2 to 4.5 years old ($M = 3.4$ years old, $SD = .53$). The majority of fathers were aged between 36 to 45 years old (66%; $n = 79$) ($M = 38$ years old, $SD = 6.0$), whereas the majority of mothers were aged between 31 – 40 years old (65%; $n = 85$) ($M = 35$, $SD = 5.3$). With respect to their highest level of education obtained, 48% ($n = 63$) of mothers had completed a university qualification, 28% ($n = 36$) had completed school and 24 % ($n = 32$) successfully obtained a certificate from TAFE and other relevant institutions. With respect to the fathers' level of education, 39% ($n = 46$) had completed university qualifications, 24% ($n = 28$) had completed a program of study at TAFE or other relevant institution and 38 % ($n = 45$) had finished school. Questions relating to occupational status showed that most parents

worked in non-professional occupations (i.e., labourers, elementary clerical, intermediate production and transport, intermediate clerical, sales and service, advanced clerical and service, and trade person and related) (i.e., fathers: 64%; $n= 69$; mothers: 58%; $n= 75$). Thirty-two percent of fathers ($n= 35$) and 28% of mothers ($n= 36$) worked in professional occupations. A further 13% ($n= 17$) of mothers were unemployed, whereas less than 1% ($n= 1$) of fathers were not in paid employment. There were also 3 fathers (3%) and 1 mother who were students.

The data showed that there was a relationship between the occupational and educational status of parents and the socio-economic status of the child-care centre selected. Fathers (56.4%) and mothers (61.6%) who had completed a university qualification were more likely to select child care centres that were located in high socio-economic areas than fathers and mothers who completed technical, trade or TAFE certificate (18.2%) (20.1%) and school levels (25.4%) (18.3%); for fathers, $\chi^2 (6, N= 108) = 30.88, p < .001$ and mothers, (18.3%), $\chi^2 (6, N= 131) = 11.46, p < .05$.

As children's enrolment in child care centre is associated with parents' educational and occupational levels, this study therefore included children from all levels of socio-economic areas. However, several criteria were imposed in the selection of participants for this study. Since this study attempts to examine the effect of child care on children's cognitive development, it excluded children who had disabilities relating to cognitive ability (e.g., Down syndrome). Children also had to be between 2 and 4½ years old. This age range was selected because a recent meta-analysis of 60 studies suggested that the score of cognitive and social skills measured during preschool age can significantly predict the conditions of cognitive and social skills during school age period (Laparo & Pianta,

cited in NICHD Early Child Care Research Network, 2002a). Additionally, the study started with this age group so that a follow-up study would be possible 6 months later, but prior to the children entering a formal school. Taking these factors into consideration, it was important for Study I to measure the effect of child care at this age because it gives some indication of the likely performance of participants during the first year of school.

4.2.3. Measures

(1) Classroom Quality

Study I employed the Early Childhood Environment Rating Scale – Revised Edition (ECERS-R) (Harms et al., 1998) as the measure of classroom quality. The scale has been used successfully since it was revised (Burchinal & Cryer, 2003; Burchinal et al., 2000a). Harms et al. (1998) argued that this scale is reliable and valid for measuring the quality of child care. The internal consistency of the total scale is Cronbach's alpha .92 and the subscale's internal consistency ranges from Cronbach's alpha .71 to .88. The internal consistency of the total scale in Study I is Cronbach's alpha .80. The test-retest correlation score in this study was .84.

The ECERS-R focuses on the global quality of the classroom. It specifically measures the process features of quality care of the participating children. Although the National Child care Accreditation Council Inc (NCAC) in Australia has developed its own standard measure of quality care for child care centre (i.e., Quality Improvement and Accreditation System -QIAS) and all centres are accredited based on the score of this instrument, the present study employed ECERS-R because it has been used extensively in child care research in the United States (Burchinal et al., 2002; Howes et al., 1992) and

other countries (Munton, Rowland, Mooney, & Lera, 1997). Using the ECERS-R in the present study presented an opportunity to examine the reliability of the test with Australian pre-school children.

The ECERS-R comprises seven categories that have been organized into seven separate subscales. The subscales are: (i) space and furnishings; (ii) personal care routines; (iii) language-reasoning; (iv) activities; (v) interaction; (vi) program structure; and (vii) parents and staff (Harms et al., 1998). Based on these 7 subscales, there were 43 items in ECERS and each of the items are rated on a 7-point scale with descriptors including 1 (inadequate), 3 (minimal), 5 (good) and 7 (excellent). Higher total score means a high level of overall quality child care.

(2) Amount of Time Spent in Day Care

The present study indexed the child's varying amounts of time in child care centre by: (i) DPW - day(s) per-week, (ii) HPD - hour(s) per-day, (iii) HPW - hour(s) per-week, (iv) NM - number of months from date of entry to child care centres until the beginning of Study I, and (v) TH - total hours from age of entry until the beginning of Study I. The information was collected from parents via the survey questionnaire (see appendix XII). DPW and HPD were based on the questions asked in the questionnaire. However, HPW is calculated with DPW x HPD; NM was counted by subtracting the age of the children from the age of entry to child care until the date of Study I begin. TH (total hours) was counted based on the HPW multiplied by 4 (four weeks in a month) and the score was multiplied by the number of months children had enrolled in child care.

(3) Family Social Environment

The Family Environment Scale (FES) (Moos & Moos, 1986) was used to gather information about the social climate of the families of the participating children. It has three forms: Real Form, Ideal Form and Expectations Form. The Real Form (Form R) measures people's perceptions of their nuclear family environments, the Ideal Form (Form I) measures what people understand about an ideal family environment, and the Expectations Form (Form E) measures people's expectations of what is in a proper family setting. In Study I, Form R was used due to the age of the participants. This is because the studied children were not able to complete the questionnaire, nor understand what constitutes the ideal family due to their young age.

The internal consistencies of the ten subscales of Form R were generally within an acceptable range, for example, Cohesion .78; Expressiveness .69; Conflict .75; Independence .61; Achievement Orientation .64; Intellectual-Cultural Orientation .78; Active-Recreational Orientation .67; Moral-Religious Emphasis .78; Organization .76 and Control .67 (Moos & Moos, 1986). The internal consistency of the 10 Family Social Environmental Scales in this study range from Cronbach's alpha .37 for Moral Religion-Emphasis subscale to .78 for Cohesion subscale. The Moral Religion-Emphasis subscale was excluded from subsequent analyses.

The Form R is a 2-point scale (true-false) that contains 90 items. It assesses three groups of underlying domains: (i) the Relationship domain; (ii) Personal Growth domain; and (iii) the System Maintenance domain.

Although the Home Observation for Measurement of the Environment-Inventories (HOME) has been used more frequently by researchers to examine the level of cognitive stimulation received by children in the home, the FES was used here because it measures the quality of relationship between family members. Research has found that HOME was correlated with FES (Gottfried, 1984). Recent literature has suggested that the quality and quantity of home stimulation received by children (i.e., measured by HOME) is influenced by the social environment in the family. It is assumed that, if the quality of the social climate is scored highly, the quality and quantity of stimulation that are important to cognitive and social development received by the children at home will also be high (Gottfried, 1984).

(4) Social Behaviour

In Study I, the social development of the children was measured by two scales: the Strengths and Difficulties Questionnaire - SDQ (Goodman, 1997) and the Adaptive Social Behaviour Inventory – ASBI (Hogan, Scott, & Bauer, 1992). In Study I, parents only rated the SDQ, while caregivers were given both SDQ and ASBI.

The Strengths and Difficulties Questionnaire - SDQ (Goodman, 1997) is a brief behavioural screening questionnaire for 3-16 year olds. It is a reliable and valid scale. The internal consistency of the scale is Cronbach's alpha .73 and the study retest stability after 4-6 months is .62. In Study I, the reliability of the SDQ total scale was Cronbach's alpha .77 (as rated by parents) and .79 (as rated by caregivers). In terms of validity, research has found that SDQ is highly correlated with the Rutter Parent Questionnaire (Rutter, Tizard, & Whitmore, 1970) and is of comparable predictive validity (Berg, Lucas, & McGuire, 1992). It has also been found that SDQ is highly correlated with the Child Behaviour Checklist

(CBCL) (Achenbach, 1991) in which all correlations are significant at $p < .001$ and it has greater content validity than CBCL (Goodman & Scott, 1999). SDQ has been used extensively throughout Europe (Goodman, Meltzer, & Bailey, 1988); Sweden (Smedje, Broman, Hetta, & von Knorring, 1999); and Germany (Klasen et al., 2000) in particular. There are several different versions of the SDQ that are designed to meet the needs of researchers, educationalists and clinicians. In Study I, the researcher used version one-sided informant-rated for teacher and parents of 3 (and 4) year old because it is designed for the children of the age selected for this study. The scale has 25 items which assess positive and negative psychological attributes as divided into five subscales, each of 5-items: The subscales are: 1) emotional symptoms; 2) conduct problems; 3) hyperactivity/inattention; 4) peer relationship problems; and 5) Pro-social behaviour. The scale is scored 0 if it is not true, 1 for somewhat true and 2 for certainly true. Reverse scoring is used for items 7, 21, 25, 11 and 14. Scoring can be done either for individual subscales or total SDQ scale (i.e., all subscales except Pro-social behaviour subscale). Higher total SDQ score means higher behavioural problems.

The Adaptive Social Behaviour Inventory – ASBI (Hogan et al., 1992) is a social competence assessment for preschool age children. NICHD (1998) used ASBI among 545 samples when the children were 24 and 36 months. It concluded that the coefficient alphas for these scales during 24 and 36 months that were completed by mothers were .77 and .76 for Express; .82 and .82 for Comply; and .60 and .62 for Disrupt. For the questionnaires completed by caregivers, the Cronbach's alphas were .82 and .84 for Express, .84 and .87 for Comply, and .70 and .73 for Disrupt. Houck (1999) stated that the internal consistency reliability for ASBI was (Cronbach's alpha = .73 at 12 months, .74 at 24 months and .74 at 36 months). The reliability of the total scale in Study I was .89.

The ASBI comprises 30 items and 4 subscales (i.e., Express, Comply, Disrupt and Pro-social). Parents or/and teachers rate the frequency of behaviour manifested by the children on a scale scoring 1 (never), 2 (sometimes) and 3 (often). A higher score indicates more adaptive social behaviour. Originally, the ASBI was used as a separate subscale (Hogan et al., 1992), but subsequent research has reversed the items in the Disrupt subscale to generate the total ASBI score (Houck, 1999). This method was also used in the current study.

(5) Demographic Questionnaire

Information concerning the children's and parents' demographic characteristics (age, sex, parental level of occupation, single or two – parent status) was obtained using a demographic questionnaire developed by the Research and Evaluation Unit at the Women's and Children's Hospital, University of Adelaide. The Women's and Children's Hospital, Adelaide has used this questionnaire extensively in its studies for more than a decade. Parental occupational level was categorized into ten categories that adopted from ABS occupational categories. The categories include 1) unemployed; 2) students; 3) labourers, elementary clerical; 4) elementary clerical, sales and service; 5) intermediate production and transport; 6) intermediate clerical, sales and service; 7) advanced clerical and service; 8) trade person and related; 9) associate professional; and 10) professional. Further, the 10 categories were recoded into 4 main categories: 1) unemployed; 2) student; 3) non-professional; and 4) professional for the purpose of descriptive demographic data analysis. The first two categories (unemployed and students) were added to this level of occupation. These categories of the level of occupation are similar for father and mother. In terms of educational levels, parents' (father and mother) responses were coded as: 1) Primary School; 2) Some years of high school; 3) Year 12, Matric or equivalent; 4) Technical, trade

or TAFE certificate, or some university; 5) Completed university qualification. For descriptive statistical analysis the categories were recoded into fewer categories that are 1) school levels; 2) Technical, trade or TAFE certificate and 3) completed a university qualification.

(6) Cognitive Ability

The cognitive ability of the children was measured using the Differential Ability Scale (DAS) (Elliot, 1990) which is designed to measure specific abilities and overall cognitive functioning in children aged 2.6 to 17.11 years old. It is an individually administered battery and it takes about 45 to 65 minutes to complete. The full scale of this cognitive battery was administered to the 15 children who participated in the pilot study. However, many children could not concentrate throughout the test. Due to the lack of concentration, the researcher changed from the full scale of Cognitive Abilities to Verbal Ability Scale in Study I.

The Verbal Ability Scale has 2 subscales (Verbal Comprehension and Naming Vocabulary) and it is short enough to use with children. The Verbal Ability Scale has good psychometric properties. Elliot (1990) reported that the reliability for composite Verbal Ability at preschool aged is .88. The construct validity for the Verbal Ability cluster for preschool aged when compared with the Wechsler Preschool and Primary Scale of Intelligence – Revised (WPPSI-R) (Verbal IQ) is .74. Another reason that researcher changed to Verbal Ability is because research in the past has shown that caregivers' verbal interactions with children significantly contributed to the child language development (McCartney, 1984; McCartney, Scarr, Phillips, & Grajek, 1985). In addition, the caregivers also recommended using a test that takes less than 15 minutes to keep children's attention.

The Verbal Ability Scale uses a standard scoring form and follows scoring rules that are written in the test manual. In this study, the calculation of the Verbal Ability scores involved a 2-step process. After each subtest (i.e., naming vocabulary and verbal comprehension) was scored, the raw point totals were converted to ability scores. These ability scores give a raw level of performance on the individual subtest based on the number of correct item responses and the difficulty of the items administered.

4.2.4. Procedures

The study adopted a careful sampling method in order to ensure that the participants were reasonably representative of the population. Child care centres from high, middle, and low socio-economic areas (SEA) in South Australia were included (see Tables 4.2). Once the process of gathering the name, address and contact numbers of child care centres from National Child care Accreditation Council (NCAC) website that based on the postcode of SEA areas was completed, the researcher contacted directors of child care centres, and asked if they were interested in participating in this study. The researcher met those directors who were interested and brought a letter formally inviting them to participate (see Appendix I) and also gave them the information sheet (see Appendix III). Each director who agreed to participate proceeded with step two - contacting parents through the centres - and those who sought more time to read the information sheet were contacted again after a week by the researcher to obtain their decision.

After a given director agreed to participate, the names of the children who fell in the age category (2½ to 4½ years old) were provided. Since the total number of children who fell in the focus age range was small, letters were sent out to all parents (see Appendix II). Parents were contacted through the centres and the initial letter from the researcher was

attached with the cover letter from the director of each child care centre. The initial letter was a brief introduction to the research and contained the aims and the nature of involvement of participants (see Appendix II). The consent form (see Appendix IV) was also provided at this stage. Step three proceeded after receiving the consent from parents. If parents did not return the consent form in two weeks, the researcher sent a reminder to them mentioning the importance of their participation in the study (see Appendix V). A second reminder letter was sent to them (see Appendix VI) when parents still did not respond after two weeks. Out of 170, only 23 parents (14%) did not return the consent form. Thus, the names of children whose parents did not return the consent form after being given two reminders were withdrawn from the list.

When the parents had returned the consent form to caregivers, data collection began immediately, starting with collecting information from parents via a set of questions. After the parents completed the questionnaire, they were asked to return it directly to the researcher using the reply paid envelope provided. While waiting for the parents to return the questionnaire, the researcher conducted classroom observations to ascertain the general quality of child care by using the ECERS-R. The classroom observations were conducted twice for 3 hours for the purpose of test-retest reliability. The team leaders in the classroom were interviewed to gather information regarding unobserved situations that needed to be evaluated in the observation scale (such as how they used TVs or computers).

Once test-retest observations for ECERS-R were conducted, the cognitive abilities test was administered. Although the researcher followed the test administration requirement strictly, one aspect that could not be controlled was the location of the assessment. The children's verbal ability assessment was conducted in the classroom. This was because it is the policy of the standard child care centre not to leave a child with other people without a

staff member present at any time. Accompanying an individual child into another room during test administration was not possible because of a lack of staff available to look after the children remaining in the classroom. For this reason, if the test is conducted in the same classroom, teachers can still closely supervise the studied child during test administration and also look after the other children in the classroom. A corner of the classroom was provided with a table and two chairs were used as the place to administer the test. The caregivers, who were available in the classroom constantly, minimized the noise and loud sounds from other children. This scenario was consistent throughout all the child care centres in this study.

Finally, caregivers were given a survey questionnaire that collected information about children's behaviour at the child care centre and asked to return it personally to the researcher once they had completed it.

Ethical Considerations

The study was approved by the Ethics Committee of the School of Psychology at the University of Adelaide. The researcher was required to inform subjects in the information sheet that their responses would not be disclosed to other people except the researcher and no name or identification was used in the research. The gender and age were only for identification and coding purposes. In addition to confidentiality, the approval also emphasised the rights of participants and told them that they had the right to withdraw from the study at any time they wanted.

Statistical Analyses

The statistical analyses used in Study I comprised predominantly of bivariate correlations and hierarchical multiple regression (MRA). In the bivariate correlations,

Spearman's rho coefficient was selected when analysing the association between demographic variables (mothers' age, educational and occupational levels; fathers' age, educational and occupational levels) and studied variables. On the other hand, Pearson's product moment coefficient was used when analysing the associations between predictors (different measures of amount of time in child care, family social environment, quality child care – ECERS-R score) and criterion variables (i.e., score on verbal abilities measures and social behavioural scales). The analysis indicated to what extent predictor variables were significantly associated with the cognitive abilities and social behaviour.

In this study, several analytical strategies were possible. One possibly, given the nature of the data, was to conduct hierarchical linear models that took account of the fact that groups of children were sampled from different child care centres. In this sort of analysis, it would be possible to examine the separate effects of variables that occur at a centre level (e.g., child-care quality) and those which exist at an individual level (e.g., family background). However, there were two reasons why this type of analysis was not adopted. First, the sample size within centre types (low, middle and high SES) was relatively small. Second, there did not appear to be a strong hierarchical structure in the data as confirmed by several analyses undertaken using SPSS-v.17. The relationships between the major individual level predictor variables and the different measures of psychological development and wellbeing were analysed using ordinary least squares regression. Subsequent one-way ANOVAs conducted using the saved residuals from these analyses showed no significant variations in the magnitude of these residuals from one centre type to the next. In other words, there did not appear to be any strong evidence of cases from one type of centre being of a particularly homogenous nature. Another series of analyses were conducted using SPSS linear mixed models (Mixed procedure). Intraclass

correlations were conducted by running null or intercept only models to compare the amount of variance attributable to the centres as opposed to variations in individuals. The amount of variation due to centres was very small (intra-class correlations were typically < .10). Similarly, when the predictor variables were examined using random coefficient models, there was little evidence of significant differences in slope or intercept coefficients between the different centre types. In other words, centres did not differ in their overall scores on the predictor variables and the strength of the relationships between predictor variables and the dependents (measures of psychosocial adjustment or cognitive development) were relatively consistent across the centre types.

A decision was therefore made to conduct individual level analyses, but taking centre level variables into account in the models. To achieve this objective, a series of hierarchical regression analyses were conducted to examine the explanatory power of different classes of variable in sequence. The four outcome measures were: verbal comprehension, naming vocabulary, strength and difficulty in social behaviour and adaptive social behaviour. In these models, child and family variables which have been shown by previous research (Gregory, Caspi, & Moffitt, 2006; Ramos et al., 2005) were entered in first. Thus, in examining the predictive effect of different measures of amount of time in child care on a child's developmental outcomes, the variables were entered as follows: (1) age of child; (2) parent education, age and occupation background; (3) family social environment; (4) quality child care; and (5) amount of time in child care.

On the other hand, to investigate the extent to which the quality of child care and family social environment predicted children's cognitive and social development, the first model described above was extended. Total scores on the ECERS-R were entered after

controlling for the factors described above. Similar analyses were conducted to measure the additional influence of family environment on outcomes.

The MRA was also used to test for interactions between different measures of time and family social climate and quality care on children's cognitive and social development. Similar to the analyses of direct effect, regression analyses of interaction effect also controlled age of children and parents' demographic background in the first steps. Then, family social environment (one subscale analysed for each time) was entered in the third step and the measure of amount of time (one measure of time analysed for each time) in the fourth step. Finally, cross product analyses between measures of amount of time and family social environment were undertaken. Similar regression models were used for evaluating the interaction effect of quality child care except the total score of ECERS-R entered in third model and the cross product between total score of ECERS-R and the measure of amount of time entered in the final step. Separate regression analyses were undertaken for each of the four outcome measures, i.e. verbal comprehension, naming vocabulary, strength and difficulty of social behaviour and adaptive social behaviour.

4.3. Results

4.3.1. Descriptive results

Table 4.3 provides descriptive statistics for all metric measures. Overall, children in this study came from families that have good family social climates and close to half of the participating families sent their children to centres that were rated as good quality child care centres (i.e., child care centres that were rated equal and more than 5 of the average ECERS-R score). In terms of children's social development, children were generally rated by their mothers and caregivers as having few problems in social behaviours (less than

10%). Out of several social behaviour scales, children were rated higher on the conduct problem scale. Most children were also considered to have satisfactory levels of cognitive development, although there were a few students who scored lower on the verbal abilities subscale. In terms of child verbal ability, the majority of children in this study obtained above average scores.

Table 4.3

Summary statistics for psychometric measures

Variable	M (SD)	Actual Range	Possible scoring range
Family Environment			
Cohesion	7.41 (0.99)	3-8	0-10
Expressiveness	6.70 (1.57)	1-9	0-10
Conflict	2.17 (2.02)	0-8	0-10
Independence	5.75 (1.30)	2-9	0-10
Ach Orientation	4.79 (1.47)	1-8	0-10
Intellectual cultural	6.41 (1.91)	2-9	0-10
Active-recreational	5.70 (1.95)	1-9	0-10
Moral religious	3.83 (1.96)	0-9	0-10
Organization	6.06 (2.23)	1-9	0-10
Control	4.64 (1.99)	0-9	0-10
ECERS			
Average Total Score	5.83 (0.33)	4.86-6.33	1.00-7.00
Verbal Ability Scale			
Verbal Comprehension	89.15 (23.00)	17-136	10-174
Naming vocabulary	77.01 (15.11)	13-133	10-169
SDQ (parent rating)			
Emotional	2.31 (1.94)	0-7	0-10
Conduct	2.97 (2.02)	1-7	1-10

Hyperactivity	3.50 (2.27)	0-10	0-10
Peer problems	1.47 (1.40)	0-8	0-10
Pro-social	7.89 (1.65)	4-10	0-10
Total SDQ score	10.28 (4.01)	4-23	0-40
SDQ (Caregiver rating)			
Emotional			
Conduct	2.31 (1.93)	0-7	0-10
Hyperactivity	3.22 (2.07)	1-10	1-10
Peer problems	3.58 (2.54)	0-10	0-10
Pro-social	2.40 (1.84)	0-9	0-10
Total SDQ score	6.86 (2.31)	1-10	0-10
	11.53 (5.16)	3-26	0-40
ASBI (caregiver rating)			
Express			
Comply	31.50 (4.68)	20-39	13-39
Distrupt	23.11 (4.13)	13-30	10-30
Pro-social	10.34 (3.05)	7-20	7-21
	54.61 (7.74)	37-69	23-69

4.3.2. Univariate and correlation analysis

As it was indicated earlier (under the title of statistical analyses) there are two kinds of bivariate coefficient correlation (i.e., Spearman's rho and Pearson's product moment) used in testing correlations between studied variables. Generally, there was little difference between the correlation values gained using those two types of correlation analysis which

suggested that use of a small number of ordinal level variables in later regression analyses (parental education and occupational level) was unlikely to introduce any bias into the analyses. As indicated above, these variables were scored to make them more continuous and therefore more suitable for use in correlation analyses.

(a) Age of Child and Studied Variables

The age of the child was positively correlated with quality child care that measured by ECERS-R scale, total hours in child care, and number of months in child care; $r(131) = .19, .21, p < .05$; $r(131) = .53, p < .01$. The results implied that children who were older experienced greater quality care, total hours in child care and number of months being in child care. The age of children was also found to be positively associated with better scores on Comprehension, Naming Vocabulary, Pro-social subscales, and Hyperactivity $r(131) = .57, .28, .23, p < .01$; $-.19, p < .05$,

(b) Demographics and Child Care Variables

Spearman's rho coefficient correlations were computed to examine associations between parents' demographic characteristics and child care variables. Parents' demographic characteristics were found not associated with the quality of child care (as measured by ECERS-R). However, there were significant associations between parents' demographic characteristics (i.e., levels of occupation and education) and the measures of time children in child care. As indicated in Table 4.4, mothers' occupational and educational levels were positively associated with amount of time in child care. Both educational and occupational levels (i.e., professional) were related with a greater number of months children in child care and occupational level- rather than educational level- was moderately associated with the number of months children in child care. These findings

suggest that children with professional mothers were more likely to have spent more months in child care than children of non-professional mothers. These children were also more likely to be in care more hours per day, week and in total.

Table 4.4

Correlations between demographic characteristics and child care variables

Variable	DPW	HPD	HPW	NM	TH
Mother					
Occupational levels	.14	.20*	.20*	.39**	.36**
Educational levels	.09	.09	.11	.17*	.18*
Father					
Occupational levels	-.01	.12	.01	.19*	.07
Educational levels	-.12	.20*	-.07	.12	-.03

Note: DPW = Day in a week; HPD = Hours in a day; HPW = Hours of child care in a week; NM = Number of months in child care; TH = Total hours. Total hours were calculated by hours children had attended child care from the age of entry until the beginning of Study I.

* $p < .05$, ** $p < .01$

(c) Demographics and Family Environment

Correlation analysis was also undertaken to examine the association between parental demographic characteristics and family social environment. As indicated in Table 4.5, parental occupational status was negatively associated with the control variable suggesting that mothers and fathers with high occupational status exercise less control in their families. A similar finding was observed in relation to higher educational levels.

Table 4.5

Correlation of demographics and family social environment

Variable	Intellectual cultural orientation	Control
Mother		
Occupational levels	.33**	-.31*
Education levels	.43**	-.35**
Father		
Occupational levels	.10	-.23*
Education levels	.33**	-.20*

* $p < .05$, ** $p < .01$

Mothers and fathers who completed university qualification were more likely to be engaged in intellectual activities in the home than parents with lower levels of education. These results suggest that mothers who were educated and worked in a professional occupation exerted less control and placed a stronger emphasis on intellectual activity. A similar pattern of results was observed for fathers. Taken together, the findings suggested that the social environment in the family is related to parents' educational and occupational levels.

(d) Demographics and Verbal Ability

In terms of association between demographic characteristics and child verbal ability, correlation analyses showed that the mothers' age was positively associated with total scores on the measure of verbal ability, $r(131) = .17, p < .05$. These results suggest that children born to older mothers scored higher in verbal ability measures than children born to younger mothers.

(e) Demographic and Psychological Adjustment (SDQ and ASBI)

Table 4.6 summarises the relationship between demographic variables and child behaviour based on parents and caregivers rating using SDQ and ASBI scales. Children's scores for the hyperactivity subscale (as based on caregivers' ratings) were negatively associated with parents' educational levels and fathers' occupation. In other words, children born to parents who had completed university qualifications and fathers who worked in professional occupations were considered to be less hyperactive when in child care. In relation to the association between ASBI measures and demographic characteristics, parents' occupational levels were also significantly associated with children scores for Comply, Disrupt and Pro-social subscales. Children who came from families whose parents worked in professional occupations were given higher adaptive social behaviour scores (as based on care-giver reports).

Table 4.6

Correlation of demographics and psychosocial functioning measures (SDQ and ASBI)

Variable	1	2	3	4	5	6	7
Mother							
Occupational levels	-.11	-.09	.11	-.13	.09	.18*	.16
Educational levels	-.14	-.18*	-.05	-.18*	.03	-.00	.04
Father							
Occupational levels	-.06	-.10	-.19*	-.23*	.18*	-.02	.21*
Educational levels	-.12	-.15	-.16	-.24**	.05	.08	.06

Note: 1 = Hyperactivity scale (rated by parent = p); Total SDQ score (p); 3 = Conduct Problems scale (rated by caregiver = c); 4 = Hyperactivity scale (c); 5 = Comply scale (caregiver =c); 6 = Disrupt scale (c); 7 = Pro-social (c).

* $p < .05$, ** $p < .01$

(f) Quantity of Child care and Verbal Ability

Correlation analysis was also undertaken to investigate the relationship between the quantity of child care received and child cognitive ability. On the whole, the quantity of child care (DPW, HPD, HPW, NM, and TH) was found to have little association with children's cognitive abilities, although two small significant relationships were found (Table 4.7). The number of months children had enrolled in child care was positively associated with verbal comprehension scores and the amount of hours per week in child care was related to naming vocabulary scores. In other words, a greater number of months in child care was associated with higher Verbal Comprehension scores whereas a greater number of hours of care per week was associated with lower Naming Vocabulary scores.

These findings provided some limited support for the hypothesis that the number of months in child care can have a positive influence on child verbal ability, but that the number of hours per week can be detrimental.

Table 4.7

Correlation of child care quantity and cognitive ability measures

Variable	Verbal Comprehension	Naming Vocabulary	Verbal Ability
HPW	-.09	-.18*	-.05
NM	.18*	.06	-.00

* $p < .05$; ** $p < .01$

(g) Quantity of Child Care and Psychological Adjustment (SDQ and ASBI)

Further correlation analysis was conducted to examine the association between the quantity of child care and social development measures (Table 4.8). Measures based on mothers' ratings were positively related to the hour(s) per day (HPD), HPW and children's conduct problems. These results suggest that spending more time in child care per week or per day is associated with greater child conduct problems. Similarly, when using caregivers' ratings, it was found that there was a positive relationship between DPW, HPD, HPW and children's scores on hyperactivity and disruptive scales. Although these relationships were generally small, the results were generally consistent with the hypothesis that spending high amount of time in child care was associated with negative social behaviour at home and in child care.

Table 4.8

Correlation of child-care quantity and psychological adjustment measures

Variable	1	2	3	4	5	6	7	8
DPW	.05	.16	.17*	.06	.15	.21*	-.24**	.12
HPD	-.14	.21*	.07	-.14	.22*	.18*	-.08	.22*
HPW	.02	.23*	.19*	.03	.23**	.25**	-.23**	.21
NM	-.21*	-.04	-.07	-.21*	-.07	-.07	-.11	-.03
TH	-.10	.14	.12	-.09	.15	.09	-.17	.18*

Note; 1=Emotional symptom scale (parent - p); 2 = Conduct problem scale (p); 3 = pro-social scale (p); 4 = Emotional symptom scale (caregiver - c); 5 = Conduct problem scale (c); 6 = Hyperactivity scale (c); 7 = Peer problems scale (c); 8 = Disturb/ASBI scale (c).
* $p < .05$, ** $p < .01$

Unlike other amount of time in child care variables, the NM enrolled in child care centres was negatively correlated with emotional symptoms (as rated by mothers and caregivers). The significant relationship indicates that a greater number of months in child care was associated with lower ratings for emotional symptoms as rated by mothers and caregivers. Thus, attending child care early (so that a child has experienced a high number of months at three years old) may be beneficial for child social development.

(h) Family Environment and Verbal Ability

There was no association between family environment scores and children's verbal ability, although there was a small positive relationship between intellectual cultural

orientation and Naming Vocabulary scores, $r(131) = .18, p < .05$. Higher intellectual cultural orientation was associated with higher Naming Vocabulary scores.

(i) Family Environment and Psychological Adjustment (SDQ and ASBI)

Table 4.9 shows that there were significant associations between family social environment and children's social developmental outcomes. Total scores on the SDQ as rated by parents and caregivers were negatively associated with family expressiveness and intellectual cultural orientation but positively associated with conflict. Higher negative ratings on social behaviour scales were associated with higher conflict and lower expressiveness and intellectual cultural orientation in the families. Analyses based on mothers' ratings alone also showed a negative relationship between other social behavioural scales and family environment variables. Low cohesiveness and high family conflict was associated with high ratings on measures of hyperactivity and peer problems scales. Similar analyses based on caregiver ratings alone showed that expressiveness and organization was positively associated with children's social adaptive behaviour. Higher rating on the expressiveness, compliance, pro-social subscales as well as total ASBI scores were associated with greater expressiveness and organization in the families. Thus, the findings were generally consistent with the prediction that greater family conflict would be associated with poorer social development in children.

Table 4.9

Correlation of family environment and psychological adjustment measures

Variable	1	2	3	4	5	6	7	8	9
Cohesion	-.23*	-.26**	-.00	-.25**	-.07	.10	.10	.11	.07
Expressiveness	-.17	-.11	.12	-.24**	-.22*	.26**	.28**	.31**	.27**
Conflict	.19*	.39**	-.18*	.36**	.19*	-.02	-.10	-.07	.08
Independence	-.11	-.05	.19*	-.12	.04	-.07	-.00	-.04	-.08
Intellectual cultural Ach	.13	.05	.05	-.29**	-.19*	.17	.16	.10*	.15
Orientation	-.21*	-.18*	.15	.07	-.00	-.04	-.02	.01	.05
Active-recreational Organization	.00	-.19*	-.03	-.02	.03	-.12	-.02	-.08	-.09
	-.15	-.11	.16	-.17	-.15	.18*	.20*	.21*	.22*

Note: 1 = Hyperactivity scale (parent - p); 2 = Peer Problems (p); 3 = Pro-social (p); 4 = Total SDQ Score (p); 5 = Total Score SDQ (caregiver - c); 6 = Express/ASBI (caregiver - c); 7 = Comply (c); 8 = Pro-social (c); 9 = Total score ASBI (c).

* $p < .05$, ** $p < .01$

(j) Child Care Quality and Verbal Ability

Child care quality measures that include space and furnishing, personal care routine, language-reasoning, activities, interaction, program structure and parents and staff were not associated with verbal ability measures. The insignificant relationship between quality child care and verbal ability was inconsistent with the hypothesis that the quality of child care would be associated with child verbal ability.

(k) Child Care Quality and Psychological Adjustment (SDQ and ASBI)

There was no association between psychological adjustment measures (SDQ – Emotional symptoms, Conduct problems, Hyperactivity, Peer relationship problems, and Pro-social behaviour scales; ASBI – Express, Comply, Disrupt and Pro-social scales) and the quality child of care as measured by ECERS-R. These findings were not consistent with the hypothesis that the quality child care would be associated with child social development.

In the next section of this chapter, further more detailed analyses are conducted to examine the relationship between predictor and criterion variables. In the analyses that follow the variables found to be significant in the correlation analyses will be examined as predictors of outcomes (children’s cognitive and social development) after controlling for other variables.

4.4. Multiple Regression Analyses (MRA)

The correlation analyses described above showed that many of the predicted relationships were not supported. For example, there was little evidence that classroom quality or family environment variables were systematically related to child cognitive development. The amount of time in care was only marginally associated with related to some cognitive scores. However, as predicted, there was some evidence that the number of hours spent per week in child care was related with poorer social behaviour scores, whereas more months in care was associated with better scores. The other finding was that family conflict was associated with poorer total SDQ scores, suggesting that this family experience is likely to be associated with poorer psychosocial adjustment. These findings

are explored further in multiple regression analyses that attempted to confirm whether these relationships would remain even after controlling for other factors. The age of child, family demographics background and climate were controlled in the analyses involving the time measures, whereas time in care became a control variable when examining the extent to which family conflict predicted psychosocial functioning measures after controlling for other factors.

To reduce Type 1 errors associated with conducting a very large number of analyses, only those predictors that were significantly correlated with outcomes variables were included in the analyses.

4.4.1. Quantity of care and verbal ability

The first series of multiple regression analyses investigated the extent to whether the amount of time spent in child care was related to children's verbal ability after controlling for age of child, parents' demographic characteristics, and family social environment. Quality child care that measured by ECERS-R was not controlled in this analysis and the rest of MRA analyses because it has no association with outcomes variable. It was hypothesised that high number of months in child care associated with high scores in verbal ability measures. This prediction was not supported. The results showed that hours of care in a week negatively associated with children's score for the naming vocabulary subscale (see Table 4.10). In other words, if children spend high amount of hours in child care, they are likely to have lower naming vocabulary scores.

Table 4.10

Hierarchical regression analysis: naming vocabulary as predicted by the quantity of child care (N=129).

Naming Vocabulary					
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.07	.07	12.02**	3.46**	.29
Step 2					
Demographic Background					
Mothers' age				<1	.06
Mothers' occupational levels	.07	.00	<1	<1	.06
Step 3					
Intellectual Cultural Orientation	.09	.02	4.01*	2.00*	.18
Step 4					
Hour(s) per week in CCC	.12	.03	4.45*	-2.11*	-.18

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

4.4.2. Quantity of care and social behaviour

The second series of multiple regression analyses investigated the extent to whether the amount of time spent in child care was related to children's social behaviour after controlling for age of child, demographic characteristics, and family social environment. On the whole, the results in Table 4.11 – 4.15 supported the hypothesis that children who spent more time in child care, in particular hours of care per week would have poorer social adjustment, whereas those with more months in child care would have better scores. Tables

4.11 -14 reveal a positive association between conduct, hyperactivity and disruptive problems in those children with more days in a week, hours in a day, hours in a week (as based on parents and care-giver ratings), whereas Tables 4.15 reveal a negative association between the number of months in care and emotional problems.

Table 4.11

Hierarchical regression analysis: SDQ hyperactivity scores as rated by caregivers predicted by the quantity of child care (N=99).

	Hyperactivity Scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.01	.01	2.28	1.51	.15
Step 2					
Demographic Background					
Fathers' educational levels				<1	.05
Mothers' occupational levels				<1	.03
Mothers' educational levels				<1	.03
Fathers' occupational levels	.04	.03	1.87	-1.75	-.33
Step 3					
Family Social Environment					
Organization				1.85	.21
Independent				-2.42*	-.25
Active recreational orientation				<1	.05
Conflict				1.79	.10
Expressiveness				<1	.02
Achievement orientation				<1	-.10
Cohesion				1.78	.19
Intellectual cultural orientation	.12	.08	2.05*	-2.15*	-.22
Step 4					
Day(s) per week in CCC	.16	.04	4.54*	2.13*	.22
Hour(s) per day in CCC	.17	.05	5.63*	2.37*	.23

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.12

Hierarchical regression analysis: SDQ conduct scores as rated by parents as predicted by the quantity of child-care (N=99).

	Conduct Problems scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.01	.01	<1	< 1	.02
Step 2					
Demographic Background					
Fathers' educational levels				1.72	.27
Mothers' occupational levels				<1	-.09
Mothers' educational levels				<1	-.02
Fathers' occupational levels	.01	.00	1.57	-1.11	-.21
Step 3					
Family Social Environment					
Organization Independent				< 1	-.03
Active recreational orientation				< 1	-.01
Conflict Expressiveness				1.48	.17
Achievement orientation				< 1	-.06
Cohesion				< 1	-.02
Intellectual cultural orientation	.01	.00	<1	-1.20	-.16
Cohesion				1.07	.12
Intellectual cultural orientation				< 1	.07
Step 4					
Hour(s) per week in CCC	.10	.09	10.54**	3.24**	.35

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.13

Hierarchical regression analysis: SDQ conduct scores as rated by caregivers predicted by the quantity of child care (N=99).

	Conduct Problems scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.01	.01	<1	<1	.00
Step 2					
Demographic Background					
Fathers' educational levels				1.68	.26
Mothers' occupational levels				<1	-.05
Mothers' educational levels				<1	-.02
Fathers' occupational levels	.02	.01	1.88	-1.34	-.26
Step 3					
Family Social Environment					
Organization				<1	-.10
Independent				<1	-.04
Active recreational orientation				<1	.11
Conflict				<1	-.10
Expressiveness				<1	-.03
Achievement orientation				<1	-.13
Cohesion				<1	.10
Intellectual cultural orientation	.02	.00	<1	<1	.07
Step 4					
Hour(s) per week in CCC	.10	.08	8.62**	2.93**	.31

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.14

Hierarchical regression analysis: SDQ hyperactivity scores as rated by caregivers predicted by the quantity of child care (N=99).

	Hyperactivity scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.01	.01	2.28	1.51	.15
Step 2					
Demographic Background					
Fathers' educational levels				<1	.05
Mothers' occupational levels				<1	.03
Mothers' educational levels				<1	.03
Fathers' occupational levels	.04	.03	1.87	-1.75	.03
Step 3					
Family Social Environment					
Organization				1.85	.21
Independent				-2.42*	-.25
Active recreational orientation				<1	.05
Conflict				1.79	.18
Expressiveness				<1	.02
Achievement orientation				<1	-.10
Cohesion				1.78	.19
Intellectual cultural orientation	.12	.08	2.05*	-2.15*	-.22
Step 4					
Hour(s) per week in CCC	.19	.07	7.85**	2.80**	.28

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.15

Hierarchical regression analysis: SDQ emotionality scores as rated by caregivers predicted by the quantity of child care (N=99).

	Emotional Problems scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.01	.01	<1	<1	.01
Step 2					
Demographic Background					
Fathers' educational levels				<1	-.02
Mothers' occupational levels				<1	-.14
Mothers' educational levels				<1	.12
Fathers' occupational levels	-.02	-.03	<1	<1	.02
Step 3					
Family Social Environment					
Organization				1.20	.14
Independent				-2.02*	-.22
Active recreational orientation				<1	.10
Conflict				1.71	.18
Expressiveness				<1	-.09
Achievement orientation				<1	-.09
Cohesion				1.13	.13
Intellectual cultural orientation	.00	.02	1.35	-1.51	-.16
Step 4					
Number of months in CCC	.03	.03	4.11*	-2.02*	-.24

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

4.4.3. Family climate and verbal ability

The results from hierarchical regression analyses that controlled age of child, parental demographic characteristics and measures of time in child care showed that measures of family social environment were not associated with verbal ability measures.

4.4.4. Family climate and psychosocial functioning

It was also hypothesised that family social climate, in particular, family conflict would be significantly related to child outcomes. Although no apparent effects emerged for cognitive development, there was evidence that family conflict was related to psychosocial adjustment as measured by the SDQ and ASBI. Table 4.16-21 summarises the result of the multiple regression analysis that entered family conflict or expressiveness or cohesion on the final step after controlling for other relevant control variables. The results indicated that family conflict, expressiveness and cohesion significantly predict poorer psychosocial outcomes even after controlling for the other factors.

Table 4.16

Hierarchical regression analysis: SDQ peer problems scores predicted by family conflict scores as rated by parents (N=105).

	Peer Problems scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.00	.00	<1	< 1	.02
Step 2					
Demographic Background					
Fathers' educational levels				<1	.03
Mothers' occupational levels				<1	.00
Mothers' educational levels				<1	-.01
Fathers' occupational levels				<1	-.04
Mothers' age	.05	.05	<1	<1	.04
Step 3					
Measures of amount of time in CCC					
HPW				-1.25	-.13
NM	.06	.01	<1	<1	.00
Step 4					
Family Conflict	.08	.02	16.16***	4.02***	.40

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4.17

Hierarchical regression analysis: total SDQ scores (rated by parents) predicted by family conflict (N=97).

	Total SDQ score				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.01	.01	2.37	1.54	.15
Step 2					
Demographic Background					
Fathers' educational levels				1.54	.24
Mothers' occupational levels				-1.74	-.29
Mothers' educational levels				<1	.06
Fathers' occupational levels				<1	-.15
Mothers' age	.02	.01	1.29	<1	.03
Step 3					
Measures of amount of time in CCC					
HPW				<1	.60
NM	.02	.00	<1	<1	-.99
Step 4					
Family Conflict	.11	.09	10.54**	3.24**	.33

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.18

Hierarchical regression analysis: SDQ peer problems scores (rated by parents) as predicted by family cohesion (N=105).

	Peer Problems scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.00	.00	<1	<1	.02
Step 2					
Demographic Background					
Fathers' educational levels				<1	.03
Mothers' occupational levels				<1	-.00
Mothers' educational levels				<1	-.01
Fathers' occupational levels				<1	-.04
Mothers' age	-.05	-.05	<1	<1	.04
Step 3					
Measures of amount of time in CCC					
HPW				-1.25	-.13
NM	-.06	-.01	<1	-.03	-.00
Step 4					
Cohesion	-.02	.04	4.27*	-2.06*	-.21

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.19

Hierarchical regression analysis: adaptive social behaviour scores (caregiver ratings) as predicted by expressiveness (N=99).

	Express scale				
	Adj-R ²	Δ-Adj-R ²	F	T	β
Step 1					
Age of child	.00	.00	<1	<1	.03
Step 2					
Demographic Background					
Fathers' educational levels				<1	.14
Mothers' occupational levels				<1	.11
Mothers' educational levels				<1	.07
Fathers' occupational levels				<1	-.19
Mothers' age	-.01	-.01	<1	<1	-.04
Step 3					
Measures of amount of time in CCC					
HPW				.72	.07
NM	-.02	-.01	<1	.75	.09
Step 4					
Expressiveness	.02	.04	5.23*	2.28*	.24

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.20

Hierarchical regression analysis: adaptive social Behaviour scores (caregiver ratings) as predicted by expressiveness scores (N=99).

Comply scale					
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of child	.01	.01	<1	< 1	.01
Step 2					
Demographic Background					
Fathers' educational levels				<1	-.06
Mothers' occupational levels				<1	.07
Mothers' educational levels				<1	-.03
Fathers' occupational levels				<1	.15
Mothers' age	-.02	-.03	<1	-1.31	-.14
Step 3					
Measures of amount of time in CCC					
HPW				-2.10*	-.22
NM	.06	.08	<1	< 1	.09
Step 4					
Expressiveness	2.30	2.24	5.31*	2.30*	.24

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 4.21

Hierarchical regression analysis: adaptive social behaviour scores (caregiver ratings) as predicted by expressiveness (N=95).

	Total ASBI				
	Adj-R ²	Δ-Adj-R ²	F	T	β
Step 1					
Age of child	.01	.01	<1	<1	.00
Step 2					
Demographic Background					
Fathers' educational levels				<1	-.07
Mothers' occupational levels				<1	.17
Mothers' educational levels				<1	.05
Fathers' occupational levels				<1	-.05
Mothers' age	-.02	-.03	<1	-1.60	-.17
Step 3					
Measures of amount of time in CCC					
HPW				-1.33	-.14
NM	-.01	.01	1.43	1.27	.15
Step 4					
Expressiveness	.04	.05	6.38*	2.52*	.27

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

4.4.5. Interaction term analyses

A final broad hypothesis was that the effects of the quantity of time in care might be moderated by other factors. In particular, different measures of amount of time in child care might significantly interact with family and child care related variables in relation to their relationship to child developmental outcomes. These analyses were undertaken the same

way as the above regression analyses, except that an interaction term based on the product of the relevant time in care variable and the potential moderator was entered on the final step. Five sets (i.e., five measures of amount of time in child care) of interaction terms were constructed and tested to explore the interaction effects. In each set and in every analyses, a measure of amount of time were cross-product with one of three subscales of Family Environment Scale (i.e., cohesion, expressiveness, and conflict) in relation to one of 12 outcome variables (two scales of Verbal ability; four subscales of SDQ rated by parents; three subscales of SDQ rated by caregivers; and three subscales of ASBI rated by caregivers). The three subscales of Family Social Environment were chosen based on the subscales that predicted child social behaviours (see Table 4.15-20). Overall, 180 analyses were run to examine the interaction effects.

Results from the interaction analyses suggested that the effects of different measures of amount of time in child care on children's social development were found to be moderated by family social environment measures. The interaction term involving number of days in a week (DPW) and family conflict was found to be significantly related to pro-social behaviour rated by caregivers. In other words, family conflict moderated the relationship between DPW and child psychosocial development. These findings are depicted in Table 4.22.

Participants were divided into two groups based on a median split of score of family conflict measure. Figure 4.1 shows the relationship between DPW and pro-social behaviour for children in low and high family conflict. The figure suggests that attending child care for higher numbers of days in a week associated with lower scores in pro-social measures when the children who come from family that reported high family conflict.

Table 4.22

Hierarchical regression analysis for the moderating effect of family social environment on the relationship between DPW and SDQ pro-social behaviour scores as rated by caregivers (N = 99).

	Pro-social scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of children	.03	.03	4.55*	2.13*	.21
Step 2					
Demographic Background					
Fathers' educational levels				<1	.11
Mothers' occupational levels				<1	.02
Mothers' educational levels				<1	-.09
Fathers' occupational levels	.00	-.03	<1	<1	-.13
Step 3					
DPW	.00	.00	<1	<1	.01
Step 4					
Family conflict	-.01	-.01	<1	<1	-.00
Step 5					
DPW x Family conflict	.10	.11	13.39***	-3.65***	-.35

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$; *** $p < .001$

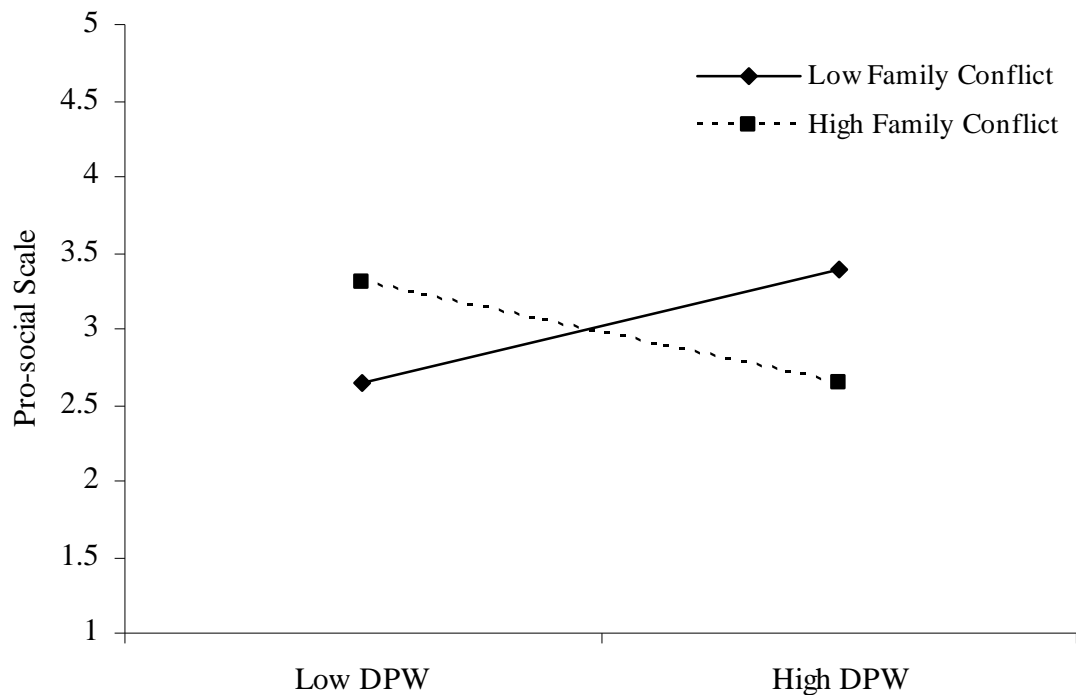


Figure 4.1: The Relationship between DPW and Pro-social Behaviour as Rated by Care-providers for High and Low Family Conflict

Another finding was the interaction term involving hours of care in a week (HPW) and family expressiveness in relation to children's peer problems scores rated by caregivers. This relationship implies that family expressiveness which refers to the extent to which family members are encouraged to act openly and to express their feelings directly could moderate the negative association between hours of care in a week and child peer problems. These findings are described in Table 4.23.

Table 4.23

Hierarchical regression analysis for the moderating effect of family social environment on the relationship between HPW and SDQ peer problem scores as rated by caregivers (N = 99).

	Peer Problems scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of children	.00	.00	<1	< 1	.08
Step 2					
Demographic Background					
Fathers' educational levels				1.05 <1	.20 .10
Mothers' occupational levels				< 1	-.15
Mothers' educational levels	.00	.00	1.18	< 1	.03
Fathers' occupational levels					
Step 3					
HPW	.03	.03	3.93*	-1.98*	-.20
Step 4					
Expressiveness	.02	-.01	<1	<1	-.02
Step 5					
HPW x Expressiveness	.06	.04	4.60*	-2.14*	-.21

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Participants were divided into two groups based on a median split of score on the family expressiveness subscale. Figure 4.2 demonstrates the relationship between HPW and Peer Problems scores for children in low and high expressiveness. The figure suggests that attending child care for higher numbers of hours in a week was associated

with lower scores in peer problems measures when the children come from families that reported high expressiveness.

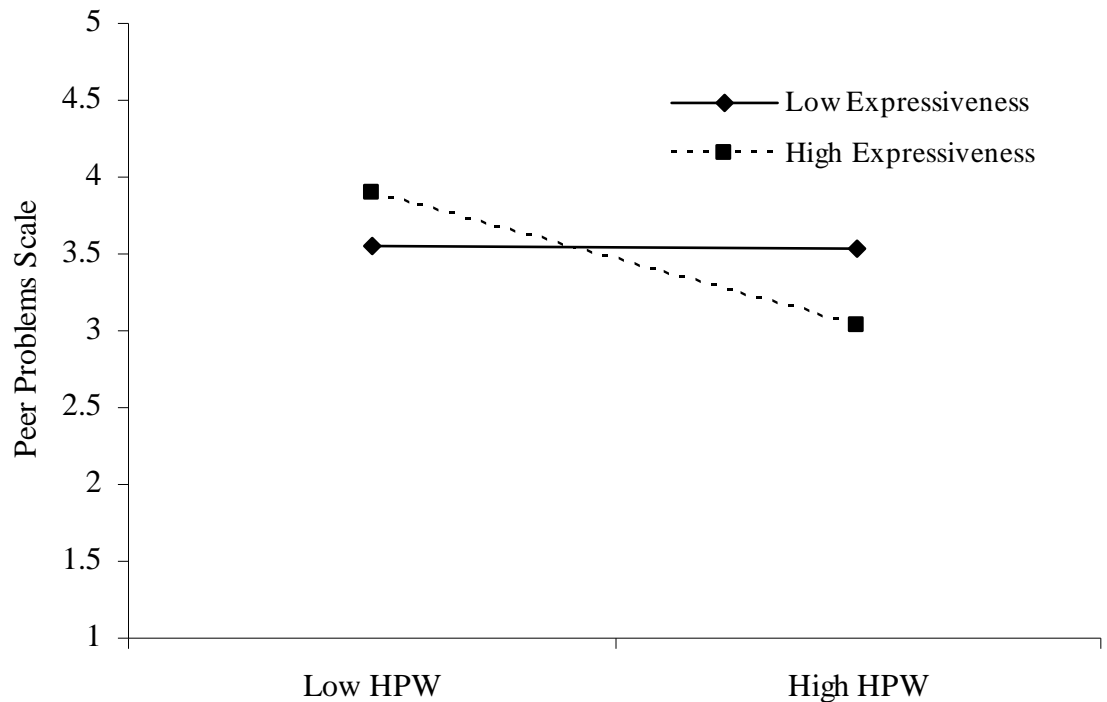


Figure 4.2: The Relationship between HPW and Peer Problems Scale as Rated by Care-providers for Low and High Expressiveness

In summary, the exploratory interaction term analyses suggest that the effect of the amount of time in child may be moderated by child's family environment at home. For example, children who come from families which encourage open expression had better psychosocial functioning even though they attended child care for many hours per week.

4.5. Discussion

According to Urie Bronfenbrenner's ecological model (Bronfenbrenner, 1979), the elements of child care and family located in the *microsystem* have a direct effect on

children's development. Study I that investigated the effect of child care (quality of classroom that measured by ECERS-R and quantity of time spent in child care) and family (family social climate) related variables showed that amount of time spent in child care and components of family social climate were significantly related to children's social development. Consistent with previous studies (Belsky, 1988; Campbell et al., 2000; NICHD Early Child Care Research Network, 2005h, 2005i), the findings of this study also demonstrated that high HPW predicted children's social problems. Even after adjusting the controlled variables (i.e., age of child, family background, and family social climate), children who spent high HPW in child care centres were rated by caregivers and parents as high in the measures of conduct problems and hyperactivity behaviour.

The results provide evidence for the effect of HPW on child social developmental outcomes when children aged between 3.5 – 4.5 years old. Previous research found HPW significantly affected child's behavioural problems when children were aged 24 months (NICHD Early Child Care Research Network, 2005i), 30 months (2.5 years old) (Harrison & Ungerer, 2000), and 54 months (4.5 years old) (NICHD Early Child Care Research Network, 2005h). However, there was a lack of research that has examined the effect of HPW on child social behaviour for children aged between 36 to 48 months (3-4 years old). For example, NICHD studies showed significant effect of HPW on social problems at 24 months and 54 months, yet there was lack of evidence on the effect of HPW and child social problems at 36 months (NICHD Early Child Care Research Network, 2005h, 2005i). Thus, Study I provides further evidence that HPW has also a negative effect on child social development at the ages between 42-54 months (3.5 to 4.5 years old).

Study I also showed that the effects of quantity child care on child development is influenced by the number of months in child care (NM). The NM was negatively associated with emotional symptoms scores as rated by caregivers. In the literature, apart from few studies that indicated positive effects of NM on child cognitive development (Broberg et al., 1997; Sylva et al., 2003), the effects of the NM on child social development has not been extensively studied because researchers focused more on effect of HPW. The results of this study therefore provide further support for the proposition that the NM in care may exert a positive influence on child development. In contrast to most previous studies that have shown positive effects for cognitive development, this study indicated that NM may also have a positive influence on child social development.

In the present study, the finding that high NM predicted low emotional problems behaviour may possibly be associated with the age of entry (i.e., before 12 months) into care and the quality child care provided. Research has suggested that when children start child care early (i.e., before 12 months) and the child care is high quality, children will benefit socially at later ages -kindergarten (Howes, 1990) eight years old (Andersson, 1992) and as adolescents (Andersson, 1989). In this study, high number of months in child care means that children started child care early. Descriptive statistics (see Appendix XVII) showed that the majority (i.e., 66%) of children started child care early (i.e., ≤ 12 months) and these children attended child care centres where quality of care was monitored by National Child Care Accredited Council (NCAC).

In addition, Study I also examined the relationship between family social climate and child development. Previous research on family social climate has indicated that cohesion, intellectual-cultural orientation, expressiveness and family organization are

significant predictors of child cognitive and social development (Garfinkle, 1982; Gottfried, 1984; Moos & Moos, 1986; Wilson & Matheny, 1983). The results of this study also suggested that family social climate has significant predictive effects on child social development. On the whole, the results of Study I showed that only three of 10 components of family social climate have relationship with child development. Cohesion, expressiveness and conflict were found as significant predictors for children's psychosocial functioning. Cohesiveness in the family was found as a significant factor that can predict low peer problems among children after considering parents' educational and occupational background and attending to child care. Similarly, the encouragement to communicate openly in families (i.e., expressiveness) was shown in this study to be positively related to child social adaptive behaviour. On the other hand, the reverse effect was found for children exposed to family conflict at home. Family conflict was found to significantly predict children's total scores on the behavioural problems and peer problems scales as rated by parents. Earlier studies on the effect of family conflict on child development have also indicated that family conflict is a significant predictor of children's problems behaviour (Harden et al., 2000; Koblinsky et al., 2006; Linares et al., 2001; Ramos et al., 2005). This effect in the present study remained even after controlling for the age of the child, family background and child care variables (i.e., quality and quantity).

With respect to the quality of child care, the results of this study showed that overall classroom quality (i.e., measured by ECERS-R) was not significantly associated with children's cognitive and social development. These findings are inconsistent with previous studies that have reported positive developmental effects resulting from the exposure to high quality child care (Burchinal et al., 1996; Burchinal et al., 2000a; Peisner-Feinberg et al., 2001). The inconsistency may relate to the quality of the child

care system. Previous studies that have indicated significant effect of overall classroom quality on child development were conducted among child care centres that varied in quality (Burchinal et al., 1996; Burchinal et al., 2000a; Peisner-Feinberg et al., 2001). On the other hand, the majority of child care centres that were studied in this thesis were more consistent in their standards. Thus, it may have been harder, due to lack of variability, to discern a relationship between overall classroom quality and child development.

In addition to the direct effect of child care and family variables on child development, the ecological model also conceptualized that family and child care could interact with each other in predicting child development. However, because of the lack of significant associations between child care quality and outcome variables, such analyses were unlikely to have been conceptually useful. Instead, only family social environment variables were tested in the interaction term analyses. The results of Study I showed that the effect of the amount of time spent in child care on children's development varied as a function of components of family social environment -- family conflict and expressiveness.

Family social environment was found to have a moderating effect on the relationship between time and child developmental outcome. Family conflict was found to significantly interact with the relationship between DPW and children's social behaviour. The results show that DPW in child care centres affects low Pro-social behaviour when children come from families that scored high on the family conflict scale. The results provide further evidence on the negative influence of family conflict on child development.

A further component of family social environment, namely expressiveness, was also found to be a significant moderator variable. The greater expressiveness reported by parents, the fewer peer problems were observed by caregivers. Children who grow up in more expressive environments may learn more effective ways to interact with others and these abilities are translated into child care settings. In contrast, children who are not encouraged to express their feelings directly at home, appear to find it more difficult to interact with peers in a way that conveys their interests and feelings.

In this first study, no significant interaction was found using the different measures of time and family social environment in relation to child cognitive development, although the number of HPW was significantly related to the naming vocabulary scores. Children who attended many hours of care per week had lower naming vocabulary scores. This finding may be related to how time in child care is used (NICHD Early Child Care Research Network, 2005o). If the time in care is not associated with high levels of cognitive stimulation, children are likely to show more negative outcomes. To investigate this issue more thoroughly requires further research that examines the nature of relevant programs or activities conducted within the child care centres.

In conclusion, Study I provides further support to Bronfenbrenner's Ecological System that child care and family factors significantly predict child development. Consistent with the literature, a high amount of HPW and family conflict negatively predict child social development even after controlling for other variables. In addition, there are also new findings that suggest that: (1) the number of months in child care is positively related to child social development; (2) the effect of amount of time in child care on children's social behaviour can be moderated by family social environment.

Higher DPW is associated with lower pro-social scores if the children were from families with high conflict while higher HPW is associated with lower peer problems scores when children experienced high expressiveness in their family. Thus, generally, findings of this study supported the assumptions made earlier that high amount of time in child care particularly HPW is positively associated with social problems while NM is negatively associated with child social behaviour. Also, the findings supported the prediction that family social climate has main and moderating effects on child developmental outcomes. One assumption that was not confirmed in this study is on the main and moderating effect of quality child care on child developmental outcomes. Therefore, in the follow-up study (i.e., Study 2), all research questions in Study 1 will be investigated again. The aims are to examine whether: 1) the insignificant predictor variables (e.g., quality child care variable that measured by ECER-R score) will show a significant effect after sometimes; and 2) the significant relationships between predictors and criterion variables observed in Study 1, most notably in relation to the time in care will strength over time as a result of greater differentiation in children's child care experiences.

Chapter 5: Study 2

5.1. Aims and Introduction

The analysis in Chapter 4 showed that the quantity of child care (i.e., HPW and NM) and family variables (in particular, family conflict) appear to be related to child social development. These findings are generally consistent with previous studies that have suggested that such factors significantly affect children's development (Belsky et al., 2007; NICHD Early Child Care Research Network, 2002a, 2005). The aim of Study 2, therefore, was to examine whether the variables examined in Study 1 would be influential when the same children were assessed six months later. Once again, it was predicted that child social and cognitive development would be related to the amount of child care, overall classroom quality (measured by ECERS-R), family social climate and the interaction effects between quantity child care and other variables (i.e., quality and family social climate). As in the first study, it was expected that:

- (1) A higher number of months in child care would be positively associated with child verbal and social behaviour, whereas a greater number of hours per week would be related to lower social behavioural scores.
- (2) Higher ECERS-R scores would be positively related to verbal ability and social behavioural measures.
- (3) Higher family social environment scores (in particular, family conflict) were expected to be negatively associated with children's social behaviour scores.
- (4) Children who were spending more time in classrooms that were rated as providing a higher quality of care would scored higher on measures of verbal ability and social behavioural measures, but that this relationship would not exist if children came

from families that reported higher levels of family conflict. Such children were expected to score lower on the social behavioural measures.

In addition, Study 2 was also designed to investigate the influence of another feature of quality child care on child development. Extensive studies on the structural characteristics of child care (numbers of children per adult, group size and caregivers qualification) as reviewed in Chapter 1-3 have indicated that structural features have a positive influence on children's cognitive and language development. To date, however, relatively little research has examined the impact of the structural characteristics of the child care centres in South Australia on children's development, in particular, the size of the group. Therefore, one further aim of Study 2 was to examine the association between the group sizes of child care centres in South Australia on children's development after controlling for the influence of other related factors such as the SES status of the child care centre. It was hypothesized that small group size would be associated with higher scores on verbal ability and social behaviour measures.

Study 2 also examined the association between an additional family variable and child development. Parental discipline practices have been found to be a significant predictor of the social behaviour of young children (Arnold, O'Leary, Wolff, & Acker, 1993). However, research on the effect of parental discipline practices on the social behaviour of children in child care has not been extensively investigated. For this reason, Study 2 was designed to examine whether parenting discipline practices were related to children's developmental outcomes after controlling for their experience in child care (i.e., quality and quantity of care). In line with previous research findings, it was predicted that less strategic parenting discipline practices would be associated with lower cognitive and

social developmental outcomes even when children spent time in higher quality child care. Parental disciplinary style would also moderate the relationship between the amount of time in care and child developmental outcomes. Thus, even though being in child care for more months was expected to benefit children, this positive association would not be observed as strongly if children came from families with more ineffective parenting discipline strategies.

5.2. Research Project

As mentioned above, Study 2 aimed to replicate and extend Study 1. In order to achieve these objectives, all participants in Study 1 were contacted again after six months. Study 2 started in July and was completed in September, 2006.

5.2.1. Participants for Study 2

The data collection was conducted six months after the data collection of Study 1 had been completed. All 18 centres that participated in Study 1 were invited to participate in Study 2, although one centre was dropped from the list because both children from the centre had graduated to kindergarten. A total of 17 child care centres participated in this study. From these 17 centres, 129 parents were approached (based on $N=131$ parents in Study 1 who returned questionnaire) and 89 parents gave their consent (see Table 5.1) to participate in the follow-up study. However, only 74 parents returned questionnaires. This meant that the response rate, as a function of the eligible sample, was $74/129 = 57\%$.

Table 5.1

Socio-Economic Areas (SEA) and participants in Study 2

Variable	No. of centres	No. of children	Percent
Low SEA	4	9	10
Middle SEA	6	36	41
High SEA	7	44	49
Total	17	89	100

Of the 74 children who participated, 36 were boys (49%) and 38 were girls (52%). Their age ranged between 2 ½ -5 years old. The age range for fathers was 36-40 years (44.3%; $n = 70$) ($M = 38$ years old, $SD = 4.6$), whereas mothers were 36-40 years old (37%; $n = 74$) ($M = 36$ years old; $SD = 4.6$). With respect to the parents' highest level of education attained, a greater proportion of mothers in Study 2 had completed a university qualification (43%; $n = 32$) as opposed to school (30%, $n = 22$), a certificate from TAFE or other relevant institutions (27%; $n = 20$). By contrast, the fathers in Study 2, were more likely to have reported having completed school (45%; $n = 32$) than other level of education (completed university qualification; 38%; $n = 27$ and certificate from TAFE or other relevant institutions; 17%; $n = 12$). Fifty percent of the parents were in non-professional occupations (mothers; 60%, $n = 44$; fathers; 61%, $n = 38$).

There was an association between the occupational and educational levels of parents and the socio-economic area of the child care centres chosen. A greater proportion

of parents with university educations (mothers; 67%; fathers; 67%) had children in child care centres located in high socio-economic areas, $\chi^2(4, N= 119) = 14.41, p < .01$ (fathers), $\chi^2(4, N= 74) = 17.92, p < .01$ (mothers). A greater proportion of fathers working in professional occupations (61%) as opposed to non-professional occupations (39%) enrolled their children in child care centres located in high socio-economic areas, $\chi^2(4, N= 62) = 17.27, p < .01$. The reverse held true for mothers. A larger proportion of mothers who had children in childcare in high SES areas were working in non-professional (42%) rather than professional occupations (36%), $\chi^2(6, N= 74) = 15.40, p < .05$. Thus, choosing child care centres for children is to some extent associated with parents' demographic characteristics (age, occupation and education).

5.2.2. Measures

The research instruments used in Study 1, such as ECERS-R, Child and Family Demographic Background Questionnaire, Family Social Environment Scale (Moos & Moos, 1986), Strength and Difficulty Questionnaire – SDQ (Goodman, 1997), Adaptive Social Behaviour Inventory – ASBI (Hogan et al., 1992), and Verbal Ability Scale – DAS (Elliot, 1990) were used again in Study 2. Details of these measures are provided in Chapter 4. The new instruments included in Study 2 are described in the following sections.

(1) Structural Features of quality child care

The data on the structural features of quality child care were collected via the caregivers' questionnaires. Caregivers were asked questions regarding the number of children per group (i.e. the maximum number of children in classroom at one time).

(2) Parenting Scales

The Parenting Scale used in this study was constructed by Arnold et al (1993). The objective of this scale is to measure discipline practices in the parents of young children. The scale comprises three subscales that include Laxness, Over-reactivity and Verbosity and has been found to have good psychometric properties. Laxness refers to the way in which parents give in, allow rules to go unenforced, or provide positive consequences for wrong behaviour. Over-reactivity is observed in parents who display anger, meanness, and irritability when dealing with their children's misbehaviour. Verbosity is illustrated as a parenting skill that relies on talking even when talking is ineffective. Verbose parents often have lengthy verbal responses towards children's misbehaviour. The internal consistency of the total score of the scale was found to be .84. The alpha for laxness was .83, .82 for Over-reactivity and .63 for Verbosity. In the present study, the alpha was .84 for total score, .82 for laxness, .76 for Over-reactivity and .42 for Verbosity. This means that considerable caution needs to be applied when interpreting scores for the Verbosity subscale. The Parenting Scale has been found to have good test-re-rest reliability ($r = .84$) for the total score and .82, .82, and .79 for the laxness, overreactivity, and verbosity subscales, respectively (Arnold et al., 1993). The Parenting Scale also has a good concurrent and discriminant validity and has been found to distinguish between clinical and non-clinical mothers. Arnold et al. found that mothers referred to a clinic because of difficulties in handling their children had higher mean scores on all subscales than mothers who did not experience these difficulties (Arnold et al., 1993).

This scale requires respondents to circle a number from 1 to 7 for every item to indicate the extent to which it describes their style of parenting. A rating of 1 indicates an effective parenting practice, whereas 7 is the most ineffective style of parenting. The total

score is the average score of all items and the total score of each subscale is the average responses of every subscale (Arnold et al., 1993). A high score means that the parents are ineffective in disciplining their children.

5.2.3. Procedures

Parents who participated in Study 1 were contacted for recruitment for Study 2 via the directors of child care. The directors of child care centres and parents were given letters (see Appendix X and XI) and information sheets (see Appendix IX) that consisted of brief background information relating to Study 2. Data collection began after parents signed the consent form (see Appendix XII). The data collection methods included survey questionnaires, observations and cognitive testing. Parents and caregivers were given questionnaires (see Appendix XIV and XV). Parents were required to complete a questionnaire with several sections, whereas caregivers (i.e., team leader/head of caregivers in the classroom) were asked to complete two questionnaires. The parent questionnaire consisted of six sections. The first three sections (Demographic Background, Family Social Environment Scales and Strength and Difficulty Questionnaire) had the same content as the parent questionnaire in Study 1. The additional three sections in the parent questionnaire included Adaptive Social Behaviour Inventory – ASBI, General Health Questionnaire – GHQ (i.e., variable measure that focuses and reports in Study III) and Parenting Scales.

The two questionnaires for caregivers included a measure that evaluated the children's social behaviour in the child care centres and a set of questions that assessed caregivers. The questionnaire that examined children's behaviour in the centres consisted of two sections: (1) The Strengths and Difficulties Questionnaire (SDQ) and (2) The

Adaptive Social Behaviour Inventory (ASBI). The caregivers' questionnaire examined caregivers' insights into the structural features of the child-care centre and their career background characteristics. In the interests of convenience, parents were provided with reply-paid envelopes that were addressed to the researcher while caregivers were provided with envelopes that could be personally returned to the researcher.

The same time as the questionnaires were being distributed to parents and caregivers, the researcher undertook the cognitive assessment of the children. The cognitive assessment in Study 2 also took place in the children's classroom. After the researcher had completed the cognitive assessment for all participating children, classroom observation of the children was then conducted. After one week of the first observation of ECERS-R, the researcher conducted another similar observation for reliability purposes (i.e., test-retest reliability). Each observation was over a period of three hours. The correlation score between the two tests in this study was .95.

Ethical Considerations

Although Study 1 had been granted ethics approval, the new issues that were investigated in Study 2 required the researcher to apply for another ethics approval. As with Study 1, application for ethics approval in Study 2 also went through the screening process by the Ethics Subcommittee in the School of Psychology, University of Adelaide. All information and data from participants were kept confidential and all participants were informed that they could withdraw from the study at any point.

Statistical Analyses

Study 2 data was analysed using correlation and hierarchical multiple regression. Bivariate correlations were used to examine the relationship between predictor variables (i.e., different measures of time in child care, dysfunctional parenting discipline practices, overall classroom quality, structural quality features (group size), family social climate, child and family demographic background) and criterion variables (verbal abilities and social behavioural measures). As in Study 1, hierarchical multiple regressions were performed to examine the relative importance of the different predictor variables. In this second study, the new group size variable was dummy coded so that it could be used in the regression analyses. The original three categories; 1 = 10 - 20 children; 2 = 21 – 30 children; and 3 = 31 – 40 children. These categories were converted into k-1 dummy variables (n = 2): size 19 - 20 (coded 0, 1 with 1 = 19-20, 0 = all others and size, and 21-30 (coded 0, 1 where 1 = 20-30, 0 = all others). The third group was a reference category that scored 0, 0 on the other two variables.

In the regression analyses, confounding variables were entered first in the regression models before the particular predictor variable was entered in last steps. The variables that were controlled include demographic background -- parent's education, age and occupational background (entered on the first step), family social climate (entered on the second step), parenting discipline strategies (entered on the third step), overall classroom quality (entered on the fourth step) and studied predictor (entered on the last step). The same procedures that were used in Study 1 were also used again to examine the interactions between the different measures of time in child care and the predictor variables (i.e., quality care and family conflict).

A second set of hierarchical multiple regression analyses was then undertaken to examine whether the structural features (namely, group size) and parental discipline strategies explained any additional variance in child cognitive and social development after controlling for other variables. In this second set of hierarchical multiple regression analyses, the variables controlled through earlier entry into the regression were: demographic background -- parent's education, age and occupational background; second, family social climate; third, parenting discipline strategies; fourth, overall classroom quality; fifth, measures of time in child care; and sixth, group sizes (Group size 1 and Group size 2). When examining the predictive effects of parenting discipline practises (DPDP), Step 3 was empty and therefore variables in Step 4-6 moved upward by one step.

In all regression analyses (i.e., first and second sets), except predictor variables in the last step, all variables related to each category that placed in a particular step were entered at once in every analysis (e.g., Step 1: Demographic background; parents' age, educational and occupational levels were entered together). However, different analyses were conducted for different predictor variables that were under consideration and for different dependent measures (i.e., verbal comprehension, naming vocabulary, SDQ and adaptive social behaviour). For example, a different analysis was conducted for SDQ as the dependent and group size as the predictor of interest vs. SDQ scores as the dependent and family disciplinary style as the predictor.

A final set of hierarchical multiple regression analyses were designed to investigate the interaction between different amount of time in child care and predictor variables (i.e., quality –group size and family related variables -DPDP). Variables were entered in using the following steps: Step 1 (demographic background), Step 2 (overall classroom quality –

ECERS-R score) Step 3 (parenting discipline practices), Step 4 (the measures of amount of time in child care); Step 5 the cross product between parenting discipline strategies and measure of amount of time. The analyses tested a single measure of amount of time and parenting discipline strategies each time. The scores of measures of amount of times in child care and parenting discipline strategies that entered individually in step 4, 5, and 6 were centred mean prior to the analyses to reduce multicollinearity.

Similar variables were entered in the regression models 1-2 when examining the interaction between the measures of amount of time in child care and group size. The different measure of amount of time was entered in Step 3 (one measure for each time) and group size was entered in Step 4 (one category of group size for each analysis) while cross product of one measure of different measures of amount of time and one category of group sizes was entered on Step 5. The researcher carried out separate moderated regression analyses for each of the four outcome measures (i.e., verbal comprehension - VC, naming vocabulary - NV, strength and difficulty of social behaviour (rated by parents and caregivers) and adaptive social behaviour (rated by parents and caregivers).

5.3. Results

5.3.1. Descriptive results

Table 5.2 presents the descriptive statistics for the measures included in the study. Most families scored above average in cohesiveness, expressiveness, intellectual cultural orientation, and organisation dimensions. A substantial percentage of parents reported dysfunctional parenting discipline practices. The majority of classrooms were rated as being of a good quality and had group sizes of fewer than 20 children. With respect to

children's developmental outcomes, children were rated by their parents and caregivers as having few behavioural problems and good social adaptive behaviours. The majority of children were above average in their verbal ability scores.

5.3.2. Univariate and correlation analysis

In analysing the association between studied variables, two types of correlation coefficient were used, namely Pearson's product moment and Spearman's rho. Spearman's rho was used when analysing the association between demographic characteristics (child age and parents' age, educational levels and occupational levels) and other variables (i.e., predictor -- different measures of amount of time in child care, family social climate, overall classroom quality, dysfunctional parenting discipline strategies and group size and outcomes measures -- verbal ability and social behavioural measures) while Pearson's product moment was selected when examining the relationship between predictor variables (as indicated above) and outcome variable measures (also as indicated above). In general, there was little difference between the correlation values obtained using Spearman and Pearson correlations, which suggested that use of the ordinal level variables in subsequent regression analyses was unlikely to have introduced any bias into the analyses.

Table 5.2

Summary statistics for psychometric measures

Variable	M (SD)	Actual Range	Possible scoring range
<u>Family Environment</u>			
Cohesion	7.72 (1.20)	4-9	0-10
Expressiveness	6.63 (1.35)	3-9	0-10
Conflict	2.04 (1.90)	0-8	0-10
Independence	5.86 (1.54)	3-9	0-10
Ach Orientation	4.51 (1.36)	1-7	0-10
Intellectual cultural	6.27 (1.73)	2-9	0-10
Active-recreational	5.72 (1.98)	0-9	0-10
Moral religious Organization	3.83 (1.84)	0-9	0-10
Organization	6.32 (1.72)	0-9	0-10
Control	4.67 (1.90)	0-9	0-10
<u>Parental Discipline</u>			
Laxness	2.48 (.68)	1.8 - 4.55	1-7
Overreactivity	2.48 (.67)	1.30 - 4.20	1-7
Verbosity	3.59 (.68)	1.53 - 5.00	1-7
Total score	2.80 (.68)	1.57 - 5.00	1-7
<u>ECERS</u>			
Score	5.74 (.35)	4.81-6.12	1.00-7.00
Group size	22.93 (5.21)	10-40	30-35

Group size 1	.68 (.46)	10-20	30-35
Group size 2	.25 (.44)	10-20	30-35
<u>Verbal Ability Scale</u>			
Verbal comprehension	105.61 (16.00)	59-136	10-174
Naming vocabulary	83.14 (12.49)	57-119	10-169
<u>SDQ (parent rating)</u>			
Emotional	1.66 (1.51)	0-6	0-10
Conduct	2.39 (1.81)	0-6	1-10
Hyperactivity	3.35 (2.07)	0-10	0-10
Peer problems	1.43 (1.37)	0-5	0-10
Pro-social	7.97 (1.84)	2-10	0-10
Total SDQ score	8.83 (4.56)	0-22	0-40
<u>SDQ (Caregiver rating)</u>			
Emotional	1.96 (1.87)	0-6	0-10
Conduct	2.67 (2.51)	1-10	1-10
Hyperactivity	3.04 (2.29)	0-9	0-10
Peer problems	1.92 (1.54)	0-7	0-10
Pro-social	7.40 (2.19)	2-10	0-10
Total SDQ score	9.52 (5.49)	0-25	0-40
<u>ASBI (parent rating)</u>			
Express	35.58 (2.82)	27-39	13-39
Comply	25.05 (3.08)	19-30	10-30
Disrupt	9.85 (2.07)	7-17	7-21
Pro-social	60.35 (4.90)	47-69	23-69

ASBI (caregiver rating)

Express	33.69 (3.84)	23-39	13-39
Comply	24.65 (3.81)	17-30	10-30
Disrupt	9.82 (2.70)	7-17	7-21
Pro-social	58.40 (6.70)	44-69	23-69

(a) Age of Child and Studied Variables

No association was found between children's age and family variables (family social climate and parenting discipline strategies), group size, and social outcome measures. However, children's age was found significantly and positively correlated with the number of month's children spent in child care, overall classroom quality and verbal ability measures. Older children scored higher on verbal ability measures, had experienced a greater number of months in child care and were exposed to classrooms of overall higher quality. Table 5.3 summarises the results of these correlation analyses.

Table 5.3

Correlation between age of child, verbal ability and child care variables

Variable	Verbal Comprehension	Naming Vocabulary	Number of months in child care	Quality (ECERS-R)
Age of child	.28*	.35**	.62**	.37**

* $p < .05$, ** $p < .01$

(b) Demographic and Child Care Variables

Of several child care variables (i.e., five measures of amount of time in child care – DPW, HPD, HPW, NM and TH; quality – ECERS-R score; and Group sizes – Group size 1 and Group size 2), only NM – number of months children in child care was associated with parents’ demographic characteristics (see Table 5.4). Mothers’ age and occupational levels were positively correlated with the number of months children had spent in child care. These findings imply that children of mothers who were older and occupied higher occupational levels (i.e., professionals) were likely to experience more months in child care than children whose mothers were young and in non-professional employment. Fathers’ educational and occupational levels were also found to be related to the number of months children spent in child care. Children whose fathers had completed a university qualification and worked in professional occupations were likely to have been in care longer (in months) than children whose parents had not completed a university qualification and who worked in non-professional occupations.

Table 5.4

Correlation between demographic and child care variable

Variable	Number of months in child care
Mother	
Age	.28*
Occupational levels	.31**
Father	
Educational levels	.24*
Occupational levels	.29*

* $p < .05$, ** $p < .01$ *(c) Demographic and Family Social Environment (FSE)*

Table 5.5 presents the relationship between parents' level of education and Family Social Environment subscale (i.e., intellectual cultural orientation subscale). There was no relationship between others demographic characteristics (parental age and level of occupation) and FSE subscales. The small to moderate size of the correlations shows that parents' educational levels were positively associated with intellectual cultural orientation. The results suggest that parents with a university qualification are more likely engage with activities that involved intellectual stimulation than parents who completed lower educational qualifications (e.g., school, technical, trade and TAFE certificate).

Table 5.5

Correlation between demographic and family social environment

Variable	Intellectual cultural orientation
Mother	
Educational levels	.37**
Father	
Educational levels	.27*

* $p < .05$, ** $p < .01$ *(d) Demographics and Parenting Style*

In addition to child care variables and FSE, Study II also examined the relationship between parental demographic characteristics and parenting style. As shown in Table 5.6, only mothers' educational level was associated with parenting discipline practices. Mothers' educational level was negatively associated with Laxness and total scores on the parenting discipline strategies scale. These small to moderate correlations showed that mothers who had completed university qualification were less likely to exercise Lax parenting discipline strategies with their children.

Table 5.6

Correlation between demographics and parenting style

Variable	Laxness	Total score
Mother Educational levels	-.29*	-.24*

* $p < .05$; ** $p < .01$ *(e) Demographic and Verbal Ability*

Correlation data using Spearman's correlation coefficient showed that father's level of occupation positively correlated with naming vocabulary and overall verbal ability, $r(74) = .30; .25, p < .05$.

(f) Demographic and Psychosocial Functioning

Table 5.7 displays the correlations between demographic variables and psychosocial functioning outcomes. Overall the correlation analyses showed that father's demographic characteristics (education and occupational levels) were more strongly associated with child social outcome measures than mothers' demographic variables. The magnitude of the correlations ranged from small to moderate and suggested that, the higher the level of education and occupation of mother and father, the lower children's scores on the measures of social maladjustment.

Table 5.7

Correlation between demographics and social behavioural measures

Variable	1	2	3	4	5
Mother's levels of occupation	.26*	-.08	.11	-.10	-.13
Father's levels of occupation	-.01	-.24	.16	-.25*	-.30*
Father's levels of education	-.04	-.25*	-.32**	-.27*	-.26*

Note: 1 = Pro-social Scale (SDQ-rated by parent); 2 = Hyperactivity Scale (SDQ- rated by parent); 3 = Peer Problems Scale (SDQ-rated by caregiver); 4 = Disruptive Scale (ASBI-rated by parent); 5 = Express Scale (ASBI-rated by caregiver).

* $p < .05$; ** $p < .01$

(g) Quantity of Child Care and Verbal Ability

The results showed that there was no association between amount of time in child care and child verbal ability score. The results disconfirmed the prediction that number of months in child care would have a positive association with cognitive abilities (i.e., verbal ability).

(h) Quantity of Child Care and Psychological Adjustment (SDQ and ASBI)

The amount of time in child care was associated with child psychosocial adjustment scores. Spending more hours per week was negatively associated with child social development (Table 5.8), but the number of months in child care was not correlated with any social behavioural outcomes.

Table 5.8

Correlation between quantity child care and psychological adjustment

Variable	Conduct problem	Total SDQ score	Compliance	Disrupt
Hours in a week	.34**	.32**	-.26*	.42**
Number of months	.01	-.04	-.04	.05

* $p < .05$; ** $p < .01$

(i) Family Social Environment and Verbal Ability

Pearson product-moment correlations were computed to investigate the relationship between family social climate and child cognitive ability. The results showed no significant association between family social conflict and child verbal ability.

(j) Family Social Environment and Psychological Adjustment (SDQ and ASBI)

Family conflict scores were found to be positively correlated with disruptive behaviour according to caregivers, $r(74) = .29, p < .05$. The higher the conflict reported in the family, the greater the disruptive behaviour in children observed by caregivers in child care centres.

(k) Parenting Style and Verbal Ability

Correlation analysis was also undertaken to examine the association between parenting discipline practices and verbal ability. There was no association between parental discipline practices and child verbal ability.

(l) Parenting Style (PS) and Psychological Adjustment (SDQ and ASBI)

Further correlation analysis was conducted to examine the relationship between PS and social developmental measures (Table 5.9). Parenting discipline strategies were positively associated with social problems measures (SDQ) but negatively correlated with adaptive social behavioural measures (ASBI). Children who came from families who scored higher on Laxness, Over-reactivity, Verbosity and total parenting discipline strategies scores were rated by their parents and caregivers as having greater conduct problems, more emotional symptoms and higher total SDQ scores. Children whose parents reported high Laxness and total PS scores were rated by their parents as less expressive, non-compliant and less pro-social at home. Thus, as predicted, parenting discipline practices that characterised as laxness, overreactivity, and verbosity) were negatively associated with child social behavioural development.

Table 5.9

Correlation between parenting style and psychological adjustment

Variable	1	2	3	4	5	6
Laxness	.16	.23*	.15	-.26*	-.27*	-.32**
Overreactivity	.27*	.24*	.09	-.15	-.11	-.16
Verbosity	.02	.09	.24*	-.10	-.03	-.04
Total PS	.20	.26*	.15	.24*	-.20	-.26*

Note: 1 = Conduct Problem (Parent - p); 2 = Total SDQ (p); 3 = Emotional Symptom (Caregiver -c); 4 = Express (p); 5 = Comply (p); 6 = Pro-social (p).

* $p < .05$; ** $p < .01$

(m) Child Care Quality and Verbal Ability

Pearson product-moment correlations were computed to investigate the association between child care classroom quality measured by ECERS-R and child verbal ability. No significant relationship was found.

(n) Child Care Quality and Psychological Adjustment (SDQ and ASBI)

There was a significant association between classroom quality (measured by ECERS-R) and child social behavioural measures. Measures based on parents' ratings were positively related to expressiveness and pro-social behaviours, $r(74) = .26; .24, p < .05$. Higher scores on the ECERS-R were also associated with greater social adaptive behaviour in children. Thus, as predicted, the results confirmed that overall classroom quality (measured by ECERS-R) would be positively related to child social behaviour.

(o) Group Size and Verbal Ability

Further point biserial correlation analysis was conducted to examine the association between group size (size 1= 10-20 and size 2= 21-30) and child verbal ability. Neither size 1 nor size 2 was significantly related to verbal ability scores.

(p) Group Size and Psychological Adjustment (SDQ and ASBI)

Table 5.10 presents the associations between group size (size 1 and size 2) and psychological adjustment. Group size 1 (10-20 children) was negatively correlated with behavioural problem measures but positively correlated with adaptive social behavioural measures. On the other hand, Group size 2 (21-30 children) was positively correlated with behavioural problem measures. The small to moderate degree of correlations suggested that when the number of children in a group ranged between 10-20 children, children had fewer problem behaviours and higher social adaptive behaviour as rated by their parents.

However, when the number of children in a group was greater (21-30 children), children were perceived by their parents as having more problematic behaviour.

Table 5.10

Correlation between group size and psychological adjustment

Variable	Total SDQ (Parent rating)	Hyperactivity (Parent rating)	Comply (Parent rating)
Group size 1	-.36**	-.28*	.26*
Group size 2	.29*	.11	-.16

* $p < .05$; ** $p < .01$

In summary, the univariate and correlation analysis section above provides insights into the association between criterion and predictor variables. The results show that many of these relationships are likely to be confounded as a result of associations between different predictor variables. The next section of this chapter will further analyse those significant relationships found in the correlation analyses. In the analyses to follow, confounding variables are controlled first in the regression models before the predictors of outcome variables are included in the analyses.

5.4. Multiple Regression Analyses (MRA)

The correlation analyses summarised above showed that not all predicted relationships were observed. For example, none of the measures of the amount of time in child care correlated with child verbal ability scores. Similarly, overall classroom quality

was also not correlated with verbal ability. The newly included variables parenting discipline practices and group size (Group size 1 and 2) were also not associated with child verbal ability scores. In contrast, most of the hypothesised relationships involving child psychosocial adjustment were borne out in the analyses. In general, greater family conflict, and lax parental discipline strategies and the number of children in groups were found to be associated with poorer outcomes.

These findings were investigated further in multiple regression analyses that examined whether these significant associations remained after controlling for other variables. The variables that were controlled first were those variables that showed significant relationships with outcome measures such as parents' demographic characteristics, HPW, family conflict, parenting discipline strategies subscales, quality care and group size. As the regression analyses were based on a data driven strategy, predictors that were significantly correlated with particular outcome variables were further analysed in the regression analyses. No regression analysis involved verbal ability measures because no other variables were correlated with these measures. Most regression analyses therefore involved social behavioural outcomes measures. Different measures of amount of time in child care -- HPW was analysed in relation to total SDQ score, conduct problem, compliance, and disrupt subscales. Child care quality -- total score of ECERS-R was examined in relation to expressive and pro-social subscales. Further analyses examined the association between dysfunctional parenting discipline strategies (laxness, over-reactivity, verbosity, and total scores) and total SDQ scores, conduct problem, emotional and pro-social subscales. Subsequent analyses examined the family conflict and disruptive subscale as well as group sizes (Group size 1 and Group size 2) in relation to total SDQ scores, hyperactivity and comply subscales. Thus, a total of 18 analyses were run to examine the

main effect of predictor variables (HPW, family conflict, parenting styles, and ECERS-R scores and group size) on psychosocial measures.

5.4.1. Quantity of care and psychosocial functioning

The first sequence of multiple regression analyses conducted in Study 2 examined whether the quantity of child care (i.e., HPW) was related to child social behaviour after a further 6 months in child care (post Study 1). The results presented in Table 5.11-13 show that the amount of hours spent in child care in a week (HPW) was positively related to total social problems scores, disruptive and conduct problems subscales as based on caregiver ratings. The results supported the hypothesis that a greater number of hours per week in care continue to have negative association with child social behaviour measures even when the assessment is replicated after six months.

Table 5.11

Hierarchical regression Analysis: total SDQ scores as (rated by caregivers) predicted by the quantity of child care (N = 54).

Total SDQ scores					
	Adj-R ²	Δ-Adj-R ²	F	t	B
Step 1					
Demographic Background					
Mothers' occupation level				<1	-.11
Fathers' occupation level				<1	-.26
Fathers' education level	-.02	-.02	<1	<1	.24
Step 2					
Family Conflict	-.02	.00	1.06	1.03	.14
Step 3					
Dysfunctional Parenting Discipline Strategies					
Total score				<1	-.15
Laxness				1.33	.42
Overreactivity	-.03	-.01	<1	<1	.12
Step 4					
Total ECERS-R score	-.04	-.01	<1	<1	-.07
Step 5					
Hour(s) per week in CCC	.05	.09	6.06*	2.46*	.36

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 5.12

Hierarchical regression analysis: adaptive social behaviour scores (caregiver rating) as predicted by the quantity of child care (N = 56).

Disrupt scale					
	Adj-R ²	Δ-Adj-R ²	F	t	B
Step 1					
Demographic Background					
Mothers' occupation level				<1	.03
Fathers' occupation level				<1	-.28
Fathers' education level	-.04	-.04	<1	<1	.20
Step 2					
Family Conflict	.02	.06	4.32	2.04*	.27
Step 3					
Dysfunctional Parenting					
Discipline Strategies					
Total score				-1.08	-.46
Laxness				2.02*	.60
Overreactivity	.06	.04	1.87	<1	-.18
Step 4					
Total ECERS-R score	.11	.05	3.30	1.81	.26
Step 5					
Hour(s) per week in CCC	.29	.18	13.61**	3.68**	.44

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 5.13

Hierarchical regression analysis: SDQ conduct problems scores (rated by caregivers) as predicted by the quantity of child care (N = 57).

Conduct Problems scale					
	Adj-R ²	Δ-Adj-R ²	F	t	B
Step 1					
Demographic Background					
Mothers' occupation level				<1	.09
Fathers' occupation level				-1.54	-.48
Fathers' education level	.00	.00	<1	1.10	.34
Step 2					
Family Conflict	.03	.03	3.10	1.76	.23
Step 3					
Dysfunctional Parenting Discipline Strategies					
Total score				<1	-.21
Laxness				1.81	.52
Overreactivity	.08	.05	2.12	-1.23	-.36
Step 4					
Total ECERS-R score	.08	.00	<1	<1	.12
Step 5					
Hour(s) per week in CCC	.18	.10	6.76*	2.60*	.33

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

5.4.2. Family conflict and psychosocial functioning

It was also hypothesised again in Study 2 that family conflict would be associated with child psychosocial functioning. This prediction was confirmed. After controlling for other variables, family conflict was positively related to higher ratings on the Disrupt Scale.

Table 5.14

Hierarchical regression analysis: adaptive social behaviour scores (rated by caregivers) as predicted by family conflict (N = 56).

	Disrupt scale				
	Adj-R ²	Δ-Adj-R ²	F	t	B
Step 1					
Demographic Background					
Mothers' occupation level				<1	.03
Fathers' occupation level				<1	-.28
Fathers' education level	-.04	-.04	<1	<1	.20
Step 2					
Dysfunctional Parenting					
Discipline Strategies					
Total score				<1	-.54
Laxness				<1	.60
Overreactivity	-.02	.02	1.30	<1	.07
Step 3					
Total ECERS-R score	.04	.06	4.28*	2.06*	.30
Step 4					
Hour(s) per week in CCC	.22	.18	12.96**	3.60**	.45
Step 5					
Family Conflict	.29	.07	5.53*	2.35*	.31

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

5.4.3. Quality child care and psychosocial functioning

Study 2 hypothesised that high scores on the ECERS-R scale would be associated with lower ratings in child behavioural outcome measures. The hypothesis was not supported. The results from the regression analyses found that there was no association between ECERS-R score and child psychosocial functioning measures.

5.4.4. Group size and psychosocial functioning

It was also predicted in Study 2 that group size would be associated with child social behaviour. Smaller group size would be positively associated with child psychosocial functioning. To test this hypothesis, dummy coded group sizes (i.e., size 1 and size 2) were analysed together in one regression. The two dummy variables were entered together on the final step of regression after controlling for other factors in every analysis. The results confirmed the hypothesis that group sizes predicted child psychosocial functioning. However, the results failed to show that Group size 1 (10-20 children) was associated with positive psychosocial functioning, whereas Group size 2 (21-30 children) was related to negative psychosocial outcomes (see Table 5.15-17). The results showed that both group sizes associated with positive psychosocial functioning. The results imply that children with group sizes 10-20 and 21-30 numbers of children in the centres tend to have positive psychosocial adjustment scores.

Table 5.15

Hierarchical regression analysis: adaptive social behaviour scores (caregiver rating) as predicted by group size (N=54).

	Express scale				
	Adj-R ²	Δ-Adj-R ²	F	T	B
Step 1					
Demographic Background					
Mothers' level of occupation				<1	.09
Fathers' level of occupation	.05	.05	2.03	<1	-.23
Fathers' level of education				<1	-.14
Step 2					
Family Conflict	.03	-.02	<1	<1	-.04
Step 3					
Dysfunctional Parenting Discipline Strategies					
Total score				-1.75	-.73
Laxness				<1	.24
Overreactivity	.09	.06	2.04	<1	.24
Step 4					
Total ECERS-R score	.07	-.02	<1	<1	.05
Step 6					
Group size 1 (10-20 children)				2.89**	.87
Group size 2 (21-30 children)	.19	.12	4.39*	2.88**	.86

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 5.16

Hierarchical regression analysis: SDQ peer problems scores (rated by caregivers) as predicted by group size (N = 56).

Peer Problems scale					
	Adj-R ²	Δ-Adj-R ²	F	t	B
Step 1					
Demographic Background					
Mothers' occupation level				<1	-.15
Fathers' occupation level				<1	-.17
Fathers' education level	.01	.01	1.21	1.42	.43
Step 2					
Family Conflict	.00	-.01	<1	<1	.06
Step 3					
Dysfunctional Parenting Discipline Strategies					
Total score				<1	-.27
Laxness				<1	.03
Overreactivity	.07	.07	2.52	2.02*	.61
Step 4					
Total ECERS-R score	.06	-.01	<1	<1	-.05
Step 5					
Group size					
Size 1 (10-20 children)				-2.70*	-.81
Size 2 (21-30 children)	.16	.10	3.85*	-2.71*	-.82

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 5.17

Hierarchical regression analysis: adaptive social behaviour scores (caregiver rating) as predicted by group size (N=54).

	Pro-social scale				
	Adj-R ²	Δ-Adj-R ²	F	T	β
Step 1					
Demographic Background					
Mothers' occupation level				<1	-.15
Fathers' occupation level				<1	-.17
Fathers' education level	.01	.01	<1	<1	.43
Step 2					
Family Conflict	-.02	-.03	<1	<1	.06
Step 3					
Dysfunctional Parenting Discipline Strategies					
Total score				-1.13	-.27
Laxness				<1	.03
Overreactivity	-.03	-.01	<1	<1	.61
Step 4					
Total ECERS-R score	-.05	-.02	<1	<1	-.05
Step 5					
Group size					
Size 1 (10-20 children)				2.65*	.87
Size 2 (21-30 children)	.05	.10	3.57*	2.49*	.81

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

5.4.5. Parenting styles and psychological functioning

Another multiple regression analysis investigated the extent to whether laxness, overreactivity, and verbosity parenting disciplinary practices, were related to child developmental outcomes. It was predicted that high scores on these parenting discipline strategies would be associated with more negative psychosocial development. There was some evidence that support the association between these parenting discipline practices and child psychosocial behaviour even after other variables had been controlled (Table 5.18-20). On the whole, high score in these parenting discipline practices reported by parents were negatively related to adaptive social behaviour.

Table 5.18

Hierarchical regression analysis: adaptive social behavioural scores (express scale) as predicted by parenting discipline practices – Total score (N=60).

	Express scale				
	Adj-R ²	Δ-Adj-R ²	F	T	B
Step 1					
Demographic Background					
Mothers' occupation level				-1.48	-.23
Fathers' occupation level				<1	.26
Fathers' education level	.03	.03	1.73	-1.04	-.31
Step 2					
Family Conflict	.02	-.01	<1	<1	-.09
Step 3					
Total ECERS-R score	.02	.00	1.03	1.01	.13
Step 4					
Hour(s) per week in CCC	.03	.01	1.28	-1.13	-.15
Step 5					
Parenting Discipline Strategies					
Total score	.08	.05	4.25*	-2.06*	-.28

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 5.19

Hierarchical regression analysis: adaptive social behaviour scores (pro-social scale) as predicted by parenting discipline practices - DPDP (N=60).

Pro-social scale					
	Adj-R ²	Δ-Adj-R ²	F	T	B
Step 1					
Demographic Background					
Mothers' occupation level				-2.18*	-.34
Fathers' occupation level				1.18	.35
Fathers' education level	.05	.05	2.12	<1	-.25
Step 2					
Family Conflict	.05	.00	1.02	-1.01	-.12
Step 3					
Total ECERS-R score	.06	.01	1.41	1.19	.15
Step 4					
Hour(s) per week in CCC	.05	-.01	<1	<1	-.11
Step 5					
Parenting Discipline Strategies					
Total score	.11	.06	4.78*	-2.18*	-.29
Lax parenting	.13	.08	5.94*	-2.43*	-.31

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Table 5.20

Hierarchical regression analysis: adaptive social behaviour scores (comply scale) as predicted by parenting discipline practices – Lax parenting (N=60).

	Comply scale				
	Adj-R ²	Δ-Adj-R ²	F	T	B
Step 1					
Demographic Background					
Mothers' occupation level				-1.98	-.31
Fathers' occupation level				1.00	.30
Fathers' education level	.02	.02	1.43	<1	-.11
Step 2					
Family Conflict	.01	-.01	<1	<1	-.11
Step 3					
Total ECERS-R score	.00	-.01	<1	<1	-.03
Step 4					
Hour(s) per week in CCC	.00	.00	<1	<1	.11
Step 5					
Parenting Discipline Strategies					
Lax parenting	.05	.05	4.59*	-2.14*	-.28

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

5.4.6. Interaction term analyses

A final aim of Study 2 was to examine the possibility that the influence of measure of amount of times in child care (i.e., HPW) might be moderated by group sizes and parenting styles. It was hypothesised that the negative effect of attending child care for many hours per week would be higher for children who came from families that reported higher scores on measures of parental discipline scales or who had children in centres with larger group sizes. Although it was originally intended that these

interaction term analyses would also include DPW, HPD, NM and TH, they were not included due to the lack of association between these measures of time in child care and child psychosocial functioning outcomes in Study 2. The analyses were carried out the same way as the above regression analyses, except that the interaction term based on the product of the appropriate time in child care was entered on the final step. HPW was used to develop cross-product terms using with each of the three subscales of parenting styles and the two group sizes in order to predict the six social outcome variables – total SDQ score, Disruptive scale, Conduct problems scale, Comply scale, Pro-social scale and Express scale (i.e., social outcome measures that were associated with HPW, family conflict, dysfunctional parenting discipline strategies and group sizes).

The results from the interaction term analyses confirmed the prediction that HPW interacted with parenting discipline strategies (DPDP) in influencing child social development. However, there was no significant group size x HPW interaction in relation to child social development scores. Contrary to expectations, the results showed that the negative effects of higher HPW was stronger for children whose families reported lower scores on parental discipline. The interaction term involving hours in a week (HPW) and total score and Lax parenting style was found to be positively associated with pro-social behaviour. This means that greater total hour in child care was related to higher rating in child pro-social behaviour when children came from families that reported higher total scores on laxness, verbosity and overreactivity parenting discipline practices. This finding is depicted in Table 5.21.

Table 5.21

Hierarchical regression analysis for the moderating effect of parental discipline practices (DPDP) on the relationship between HPW and adaptive social behaviour scores as rated by parents (N=60).

	Pro-social scale				
	Adj-R ²	Δ-Adj-R ²	F	T	B
Step 1					
Demographic Background					
Mothers' occupation level				-2.09	-.32
Fathers' occupation level				-1.58	-.46
Fathers' education level	.07	.07	2.68	1.80	.53
Step 2					
Total ECERS-R score	.08	.01	1.34	1.16	.14
Step 3					
HPW	.06	-.02	<1	.17	.02
Step 4					
Total Score of DPDP	.07	.01	1.62	-1.27	-.16
Step 5					
HPW X Total Score of DPDP	.14	.07	5.35*	2.31*	.28

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Figure 5.1 shows the associations between HPW and total score of DPDP in relation to pro-social scores. Based on a median split of total score of DPDP, the diagram (Figure 5.1) illustrates the relationship between HPW and pro-social scores at each level of total score of DPDP. The figure signifies that children who come from families that reported more laxness, verbosity and overreactivity in parenting discipline strategies had higher pro-social scores if they attended child care a greater number of hours per week.

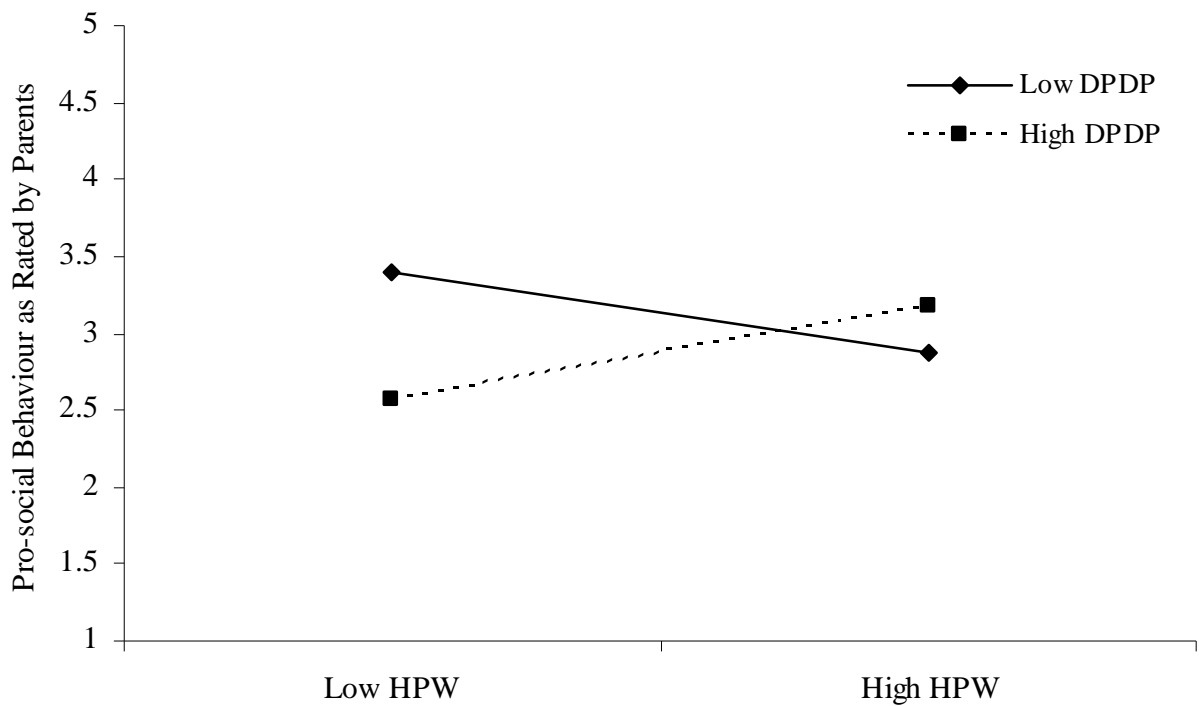


Figure 5.1: The Relationship between HPW and Pro-social Behaviour for High and Low Total Score OF Dysfunctional Parenting Discipline Practices (DPDP)

Another significant interaction term was between the HPW and Lax parenting in relation to pro-social scores. In other words, HPW was found significantly interact with Lax parenting in predicting child pro-social scores. This finding is summarised in Table 5.22.

Table 5.22

Hierarchical regression analysis for moderating effect of Lax parenting on the relationship between HPW and adaptive social behaviour scores as rated by parents (N=60).

Pro-social scale					
	Adj-R ²	Δ-Adj-R ²	F	t	B
Step 1					
Demographic Background					
Mothers' occupation level				-2.09*	-.32
Fathers' occupation level				-1.58	-.46
Fathers' education level	.07	.07	2.68	1.80	.53
Step 2					
Total ECERS-R score	.08	.01	1.34	1.16	.14
Step 3					
HPW	.06	-.02	.03	<1	.02
Step 4					
Lax parenting	.10	.04	3.16	-1.77	-.22
Step 5					
HPW X Lax parenting	.21	.11	9.07**	3.01**	.34

Note: Betas are the standardized regression coefficients from the final stage of the regression analysis.

* $p < .05$; ** $p < .01$

Figure 5.2 displays the interaction of low and high Lax parenting and hour(s) in a week in relation to pro-social score. Based on the median split of Lax parenting, Figure 5.2 clearly showed that children who come from home that has higher Lax parenting were given higher pro-social scores if they attended a greater number of hours in a week.

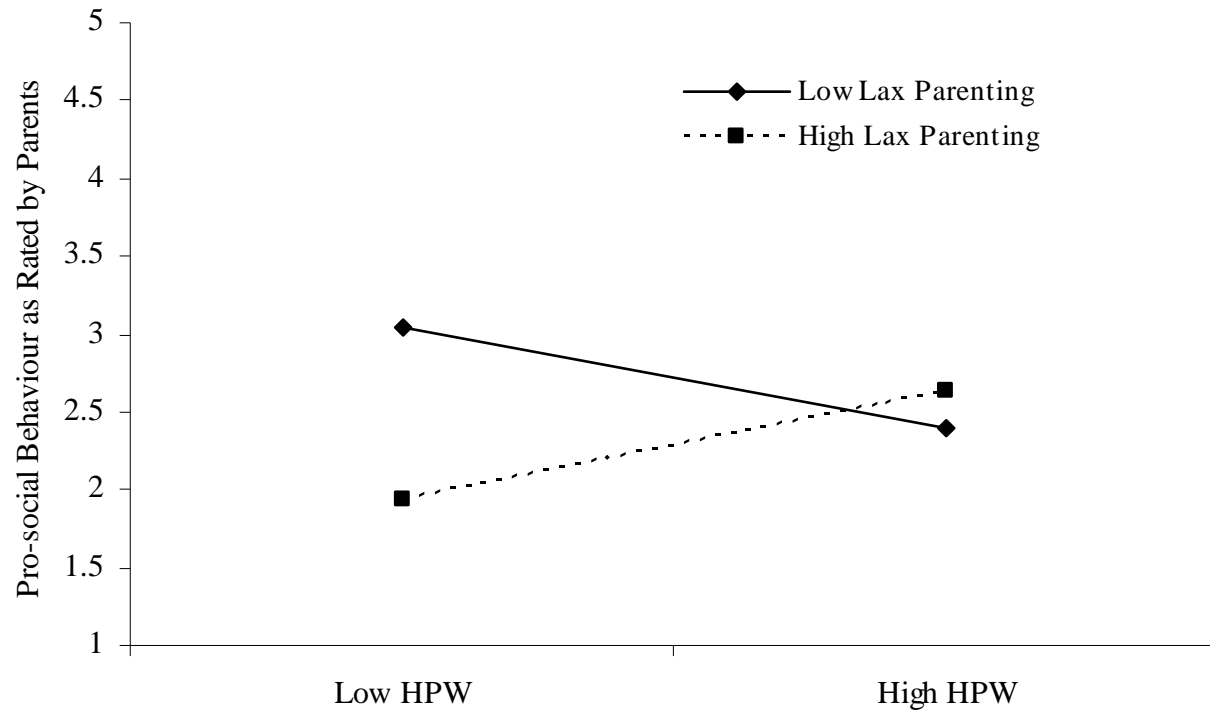


Figure 5.2: The Relationship between HPW and Pro-social Behaviour for High and Low Lax Parenting

5.5. Discussion

The results of Study 2 provide further evidence that a high number of hours of child care in a week (HPW) negatively predicts child social development. The finding is consistent with the literature that extensive hours spent in child care during a week predicted behavioural problems at preschool aged even when it was tested again after six months (NICHD Early Child Care Research Network, 2002a). A possible reason that high amount of HPW consistently shows detrimental effect on child social behaviour again in Study 1 and Study 2 may be associated with a variety of negative experiences that are linked with long hours in child care. The experiences include sharing caregivers' attention with other peers for long time which may lead to frustration and fighting behaviour between peers (Campbell et al., 2000; Harrison & Ungerer, 2000; NICHD Early Child Care Research Network, 2005h).

The results of Study 2 also indicated that the structural features of quality care also appear to be associated with children's developmental outcomes. Consistent with the literature, the results of Study 2 showed that group size significantly predicted children's social developmental outcomes (Burchinal et al., 2002; Howes et al., 1992). Regression analyses that analysed the predictive effect of group size on child developmental outcomes indicated that both group sizes (i.e. size 1- 10-20; size 2- 21-30) were associated with lower scores on the peer problems subscale but higher scores on the express and pro-social subscales. The results failed to show that children who were in a child care group size 1 (10-20) scored higher in social behavioural scales than children in larger groups (21-30 children). However, the results showed that the larger group size (21-30 children) has a less detrimental effect on child social development. This particular finding is important for child care centres in South Australia (SA) where the licensing criteria set a higher maximum number of children (over 35 for 2+ year olds) than in the USA (i.e., The National Association for the Education of Young Children –NAEYC). NAEYC recommended a maximum group size of preschoolers should not exceed 20 children (NAEYC, 2008). Given the large difference between the professionally recommended group size and the actual licensing criteria of group size in South Australia, results of this study provides evidence for the effect of group size when it is higher than professional recommendation but lower than the SA licensing criteria. Although, the group size of 21-30 was correlated ($r = .29, p < .05$) with total SDQ scores, after controlling for family factors and overall classroom quality, it no longer predicted negative social developmental outcomes.

In terms of family related-variables, parenting discipline practices (i.e., total score and Lax parenting) were found to negatively predict child social competence. Previous research that did not control child care experiences (quality and amount of

child care) has found that parental discipline strategies can be a significant predictor of children's social behaviour (Arnold et al., 1993). Similarly, the results of this study also indicated that parenting discipline practices negatively predict social competence of the children in child care. Regardless whether the children are in child care or maternal care, parenting discipline practices characterised as laxness, verbosity, and overreactivity negatively affect child development. This finding supports previous studies that have also shown family factors continue to play important role in child development even for children who attend child care centre. Earlier studies in USA, UK and Sweden have also indicated that family related variables such as language stimulation (Ackerman-Ross & Khana, 1989), cognitive stimulation (Broberg et al., 1990), and quality parenting – sensitive and responsive interaction (NICHD Early Child Care Research Network, 2000b, 2002a, 2005m) were significant predictors of outcomes for both children in maternal care as well as in non-maternal care. Parental disciplinary strategies appear to be additional factor that should be taken into account when studying children in child care.

At the same time, from these results, one should not conclude that family factors completely subsume the effects of child care. Further interaction analyses suggested that, even though family factors was a main predictor of child social development, attending child care still can contribute positively to child social development. For example, the results from the interaction term analyses suggested that spending high amount of hours of care in a week could moderate the negative effect of total score of dysfunctional parenting discipline practices scale and Lax parenting style (see Figure 5.1 and 5.2). In other words, if children are exposed to family environment that are potentially detrimental to their social development, attending child care high amount of hours in a week could compensate for the negative effects of laxness, verbosity and

overreactivity parenting discipline practices. These findings do not appear to be previously evidenced in the literature. Previous studies that examined the interaction between child care attendance and family related factors were mainly focused on the advantages of quality child care. These earlier studies suggested that attending quality child care was beneficial for children from less economically advantaged families (Caughy et al., 1994), where mothers were less educated (Peisner-Feinberg et al., 2001), were more insensitive and less responsive (NICHD Early Child Care Research Network, 1997c, 2005n), or had an African-American ethnic background (Burchinal et al., 2000b). In relation to quality child care, children in this study came from child care centres which were nationally accredited and where staff were trained and qualified. For this reason, spending many hours per week in higher quality child care may have been beneficial for children whose parents reported more laxness, verbosity and overreactivity parenting discipline practices in the family. Attending child care would provide adequate time to be exposed to better disciplinary techniques and to acquire for socially acceptable behaviour. Thus, the results of the interaction term analyses provide further support for the idea that child care can have a moderating effect on child social development for certain children.

In summary, the results of Study 2 support the theoretical proposition that both child care and family significantly predict children's cognitive and social development. Consistent with the literature: (1) a high amount of HPW appears to be a significant predictor of behaviour problems over six months even after an adjustment is made for confounding variables; (2) effective parenting discipline strategies are important for developing positive social behaviour even for children in child care; (3) group size predict children's developmental outcomes. The results reveal new findings that the effects of hours per week in child care on child development differ as a role of parenting

discipline practices and lax parenting. The amount of time in child care has a positive effect on child development when children come from families where there is ineffective parenting discipline strategies and lax parenting.

Chapter 6: Study 3

6.1 Aims and Introduction

The aim of Study 3 was to broaden the analyses included in Studies 1 and 2 by examining additional child care and family variables that may have an association with child developmental outcomes. As discussed in previous chapters, there is evidence from existing research that structural features such as overall classroom quality (e.g., as measured by ECERS-R) appear to be associated with improved child developmental outcomes (Burchinal et al., 2000a; Harrison & Ungerer, 2005; Howes et al., 1992; McCartney, 1984; NICHD Early Child Care Research Network, 2000a, 2005o; Sylva et al., 2003). Study 2 in this project also showed that having a smaller group size may also be beneficial in that children who attend child care centres with group sizes with only 10-20 children appear to have better social behaviours. In Study 3, the first additional aim was to investigate the extent to which another feature of quality care (i.e., caregivers-child interaction) is related to children's developmental outcomes. On the whole, previous studies have found that sensitive interactions enhance children's development and reduce day-to-day stress levels for children in child care centres, whereas more harsh interactions hinder child development and well-being (McCartney, 1984; Phillips et al., 1987; Sims et al., 2005, 2006).

A second aim of Study 3 was to provide further insights into the importance of family background for children's development. Based on studies described earlier, it appears that the effects of family variables are still evident even after one controls for other variables (e.g., the quality of child care) which are known to influence child developmental

outcomes (NICHD Early Child Care Research Network, 2000c, 2005m). In particular, Study 3 examined the degree to which children's functioning was associated with parent mental health status. Studies that have previously considered this issue have shown that maternal mental problems were more significant predictors of children's emotional and behavioural problems than other maternal variables such as educational status, intelligence and psychosocial risks (Steinhausen, Mas, Ledermann, & Metzke, 2006). In addition, it has been found that the effect of maternal mental problems on child developmental outcomes is still significant even when one controls for the quality of child care (Dworkin, 2003). A difficulty with Dworkin's work, however, is that the study involved mothers who were having mental health problems, so that it is unclear the extent to which one can generalise these findings to more normative populations where parents are exposed to more sporadic incidents of acute stress that might be encountered during everyday life.

In Australia, most people in society do not have a mental illness. Indeed, national survey data suggests that only 17.7% of adults have experienced one or more of the common mental disorders that can cause considerable disablement in adult daily life (Henderson & Andrews, 2000). Accordingly, to examine the extent to which Dworkin's work can be extended more broadly, there are advantages in investigating whether similar findings can be obtained using samples of the nature utilised in this project. Based on a sample of mothers sampled from the community rather than a clinical population, it was hypothesised that higher scores of parental mental distress would be associated with lower child scores on measures of child cognitive and psychosocial measures.

A fourth issue investigated in Study 3 was whether the personal characteristics of caregivers are related to child developmental outcomes. In particular, do children fare

better when they are looked after by people with few mental health problems themselves and who are satisfied with their jobs? There has been a paucity of studies on the mental distress experienced by caregivers, especially in Australia. Previous research has examined the prevalence of physical health of Australian caregivers (e.g. stress, physical trauma – lifting injuries and infectious illness – cold and eye infections) (Slack-Smith, Read, Darby, & Stanley, 2006), but none of these studies refer to mental health and its potential impact on children's development.

In a similar vein, there has been a great deal of research published concerning the job satisfaction of caregivers. For example, research in the USA has indicated that caregivers were generally dissatisfied with their salaries (Kontos & Stremmel, 1988), although most showed that care providers enjoyed having contact with children and that child-related factors were seldom related to their decision to leave. Similar findings have been reported in Australia (Lyons, 1997), but all of these studies have not examined whether poor job satisfaction influences how well they provide care to children and whether this affects child developmental outcomes. The role of job satisfaction is therefore considered in Study 3. It was predicted that children exposed to workers with higher levels of job satisfaction would have better developmental outcomes, although it is acknowledged that any relationship observed would need to be treated with some caution given the likely influence of other factors (e.g. the more effective workers may have been more satisfied with their jobs).

A final issue to be investigated in Study 3 was the interaction of family and child care related variables (caregivers interactions, parents and caregivers' mental distress and caregivers job satisfaction) on the relationship between different measures of amounts of

time in child care on child cognitive and social development. In relation to parental mental health, it was hypothesised that spending greater amounts of time in child care, in particular, a greater number of months, would be associated with more positive developmental outcomes if children came from families that reported higher levels of mental distress (i.e., child care would provide a relatively more harmonious environment for children). In contrast, spending greater amounts of time in child care would be related to negative developmental outcomes when children attended child care whose caregivers reported high mental distress or low job satisfaction.

6.2 Research Project

Study 3 was conducted at the same time as Study 2 and included the same sample as Study 2. It also involved using the same recruitment procedures and ethical considerations that applied in Study 2. Further details about Study 3 are explained in the following sections.

6.2.1. Measures

As in Study 1 and Study 2, Study 3 also includes cognitive assessment, questionnaires and observations. The children cognitive assessment that was using Verbal Ability subscale (Elliot, 1990) was administered by researcher. The measures of family demographic background, family social environment, parental discipline strategies, children's social behaviour, and maternal mental distress were included in the questionnaire provided to parents while scales relating to mental distress and job satisfaction in caregivers were added to the caregivers' questionnaire. In relation to observational measure, a

Caregiver Interaction Scale (Arnett, 1989) was used by researcher to rate the nature of the caregivers' interactions with the children in classrooms.

(1) General Health Questionnaire (GHQ-12)

GHQ-12 was developed by Goldberg in 1972 (Goldberg, 1972). It was included in the parent and caregivers' questionnaire in order to measure their recent mental health status (i.e. mental distress). This scale was constructed to detect any psychiatric disorders (e.g. anxiety and depression) that may exist among normal people in the community (Goldberg & William, 1988). In addition, GHQ is the most common screening instrument that evaluates the mental health status of non-psychotic patients (Tennant, 1977). This scale has been used extensively in Australian studies and it is considered a valid and reliable measure of psychological impairment in the Australian population (Tennant, 1977; Winefield, Goldney, Winefield, & Tiggemann, 1989; Ziaian, 2000).

The GHQ-12 has good psychometric properties and requires a very short time to complete the questionnaire (i.e., a minute or two) (Goldberg & William, 1988). It has been validated in more than 15 countries and translated into approximately 40 languages (Milne, 1992). Research has indicated that the GHQ-12 has strong concurrent validity. A comparison between the results of the GHQ-12 and interviews of psychiatric patients indicated that the median score of the sensitivity of the tests was 86% and the median score of the specificity of the tests was 80% (Goldberg & William, 1988; Milne, 1992). Scoring of the GHQ-12 in this study was based on the likert scale method. With this scoring method, responses were labelled as 0-1-2-3 in the columns. The total score is obtained by adding all scores. The higher the score, the more distressed the respondent and the greater to probability of the person having a psychiatric illness. The published norms based on

likert scoring suggest that the mean score of employed adolescents is 8.8 (Bank et al., 1980). The internal reliability (Cronbach's Alpha) of this scale in the present study was .86 for parents and .85 for caregivers.

(2) *Job Satisfaction Scale (JSS)*

The Job Satisfaction Survey (JSS) was developed by Paul E. Spector in 1985 (Spector, 1985). The scale comprises nine facets (pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, co-workers, nature of work and communication). Each facet has an equal number of four items (pay: items 1, 10, 19, 28; promotion: items 2, 11, 20, 33; supervision: items 3, 12, 21, 30; fringe benefits: items 4, 13, 22, 29; contingent rewards: items 5, 14, 23, 32; operating conditions: items 6, 15, 24, 31; co-workers: items 7, 16, 25, 34; nature of work: items 8, 17, 27, 35; communication: items 9, 18, 26, 36) (Spector, 1999). The objective of the scale is to measure employee attitudes regarding the job and aspects of their work (Spector, 2001).

JSS is applicable to all organizations and it has good internal reliability. The reliability of the total score of JSS was Cronbach's alpha .91 and the reliability of individual facets ranged from .60 to .82 (Spector, 1985). In the present study, the internal consistency of total score of JSS was Cronbach's alpha of .67 and the reliability of individual facet ranges from Cronbach's alpha of .40 (co-workers) to .80 (promotion). The lowest facet (i.e., co-workers) was omitted from analysis. Each item is scored from 1 (representing strongest disagreement e.g., Disagree very much) to 6 (representing strongest agreement e.g., Agree very much). The score of each subscale can range between 4 and 24, while the total score for job satisfaction can range between 36 and 216. The negatively worded items should be reverse scored (1=6, 2=5, 3=4, 4=3, 5=2, 6=1). The negatively

worded items are 2, 4, 6, 8, 10, 12, 14, 16, 18, 19, 21, 23, 24, 26, 29, 31, 32, 34, and 36.

This means that high scores reflect high job satisfaction.

(3) Caregiver Interaction Scale (CIS)

The Caregiver Interaction Scale was developed to produce information related to social interactions between caregivers and children (Arnett, 1989). The scale comprises 4 subscales that are labelled as follows: Sensitive Interaction, Harshness, Permissiveness, and Detachment. The Sensitive Interaction subscale contains items that concern the warmth of the caregiver's interaction with children, her level of enthusiasm, and the developmental appropriateness of her communication with them (items 1, 3, 6, 7, 8, 11, 14, 16, 19, and 25). The Harshness scale rates the caregiver in terms of hostility, being threatening, and using harshly critical behaviour toward children (items 2, 4, 10, 12, 17, 20, 22, 24, and 26). The items on the Detachment factor rate the extent to which the caregiver is uninvolved with or uninterested in the children, and spends her time in activities that did not include interaction (items 5, 13, 21, and 23). Permissiveness factors contain items reflecting a lax approach to children's misbehaviour (items 9, 15, and 18 (R)).

The CIS has good psychometric properties. The items on each subscale have a minimum loading of .49 (Arnett, 1989). Interrater reliability ranged from .89 to .98 for each subscale, with median subscale scores ranging from .92 to .95 (Peisner-Feinberg et al., 2001). In the present data set the internal consistency of the subscales ranged from a Cronbach's alpha of .50 (Permissiveness) to .86 (Detachment). The correlation score between test-retest in this study was .87. Items are rated on a 4-point scale and indicate the extent of the caregivers' characteristics, from 1 (not at all) to 4 (very much). Scoring is undertaken separately for each subscale. The summary of scores of each subscale is

calculated by combining and averaging the score of items on a particular subscale (Arnett, 1989).

Statistical Analyses

Study 3 was based on correlation and hierarchical regression analyses. As in Study 1 and 2, bivariate correlations were used to examine the relationship between studied variables whereas hierarchical regression analysis was used to examine the extent to which specified predictor variables were related to child developmental outcomes after controlling for other factors. One again, the age of children and family demographic background were controlled in the first and second steps, ECERS-R scores were entered on Step 3, the different measures of amounts of time in child care were entered on Step 4 and the predictor of interest on the final step. The first analysis entered caregiver-child interaction scores on this final step (Step 5). A similar set of procedures was then followed to examine the effects of parental mental health scores, caregivers' mental distress and job satisfaction.

Interaction effects were examined in the same way as in Study 1 and 2. The amount of time in care was entered on Step 3, the key predictor variables on Step 4 (their main effects), and then the cross-product of the amount of time in care and the key predictor on the final step (Step 5). Separate analyses were conducted for each child development variable. The total number of analyses was therefore based on the total number of outcome variables (22 variables) x the number of key predictors (16 key predictors) x number of measures of time in child care (five measures). As in Study 1 and 2, one has to treat the results from these analyses with caution because of the very large number of analyses and the probability of type one errors.

6.3 Results

6.3.1. Descriptive results

The principal correlation and descriptive data relating to the variables have already been described in Chapter 5, so that the presentation in this chapter focuses primarily on the newly introduced variables. Table 6.1 lists the descriptive statistics for the Caregivers Interaction Scale (CIS), General Health Questionnaire (GHQ) and Job Satisfaction Survey (JSS). As indicated, caregiver interactions tended to be more sensitive than harsh, permissive or detached. GHQ scores showed that the majority of parents and caregivers did not have clinical-level symptoms (i.e., the mean score of clinical patient is 21.2 and above). The JSS scores showed that caregivers reported higher satisfaction in relation to job supervision (i.e., supervisor competency, fairness, interested in the feeling of subordinates and personal feelings to supervisor) and the nature of work (feelings toward the job such as enjoyable, meaningful and beneficial) than fringe benefits (a gift from employer to all staff such as medical insurance, annual leave, bonus and etc.) and contingent rewards (appreciation received from employer).

Table 6.1

Summary statistics for psychometric measures

Variable	M (SD)	Actual range	Possible scoring range
Caregivers Interaction Scale (CIS)			
Sensitive	23.08 (3.05)	18 - 29	10 – 40
Harshness	13.78 (2.64)	12 – 20	9 – 36
Permissiveness	6.72 (1.27)	5 – 9	3 – 12
Detachment	5.59 (2.32)	4 – 10	4 – 16
Mental distress			
GHQ scores (Parent)	10.54 (4.87)	3 – 28	0 – 36
Mental distress			
GHQ scores (Caregiver)	10.80 (5.24)	6 – 23	0 – 36
Job Satisfaction Survey - JSS			
Pay	10.32 (2.90)	7 – 18	4 -24
Promotion	13.67 (5.20)	1 – 21	4 -24
Supervision	20.23 (2.77)	11 – 18	4 -24
Fringe benefit	12.18 (11.17)	7 – 76	4 -24
Contingent rewards	13.01 (5.33)	10 – 18	4 -24
Operating procedures	12.85 (3.93)	6 – 20	4 -24
Co-workers	19.47 (7.80)	14 – 21	4 -24
Nature of work	22.24 (1.94)	13 – 23	4 -24

Communication	18.13 (4.60)	7 – 16	4 -24
Total job satisfaction	136.91 (10.18)	125 - 160	36-216

6.3.2. Univariate and correlation analysis

As in Study 1 and Study 2, Spearman's rho was used to investigate the correlation between Demographic characteristics and other variables whereas Pearson product moment correlation was used when analysing the association between predictors and criterion variables. Once again, the use of Spearman's correlations as opposed to Pearson's made very little difference to the results reported.

(a) Age of Child and Caregivers Related Variables

Correlation analyses showed that there was some relationship between the age of children and several caregiver variables (Table 6.2). Respondents who provided care for older children reported greater job satisfaction and sensitivity in their interactions than respondents who provided care for younger children. However, these caregivers of older children scored poorer in all three job satisfaction measures, had lower mental distress scores and scored lower on the measure of detached interaction style.

Table 6.2

Correlation between age of child and caregivers variables

Variable	Age of child
Caregivers mental health status	-.29*
Care-giver Interaction Scale	
Sensitive	.34**
Detachment	-.34**
Job satisfaction	
Fringe benefit	-.36**
Operating conditions	-.29*
Co-workers	.33**

* $p < .05$; ** $p < .01$

(b) Demographic and Parent Mental Health

Generally, parent mental distress that was measured by GHQ was not significantly associated with any demographic variables. The results suggest that parents' age, level of education and occupation were not associated with parental distress.

(c) Demographic and Caregivers Variables

Table 6.3 shows the correlation between demographic characteristics and caregivers variables. The results showed that children born to older mother were experiencing higher level of permissiveness in their interaction with caregivers than children of younger mothers. On the other hand, parental age (both mother and father ages) was negatively correlated with sensitive interactions. Children of younger age parents were more likely to be enrolled in child care centres where caregivers had higher sensitive interactions with children. There was no relationship between maternal demographic characteristics and caregivers job satisfaction measures, but more educated fathers were more likely to enrol

their children in centres whose caregivers reported high satisfaction on pay and communication with supervisors than parents who reported lower educational levels.

With regards to the association between demographic and caregivers mental health, parental levels of education (both mother and father) were negatively correlated with caregivers mental distress. This implies that parents who completed a university qualification are more likely to enrol their children in the centres that the caregivers reported lower mental distress. Similarly, the results showed a negative correlation between fathers' occupation and caregivers' mental distress scores. The result suggests that fathers who work in professional occupations are more likely to send their children to centres where caregivers reported experiencing fewer symptoms of mental distress.

Table 6.3

Correlation between demographic background and caregivers variables

Variables	Permissiveness	Sensitivity	Detachment	GHQ	Pay
Mother					
Age	.26*	-.02	.02	.12	-.22
Education	.14	-.23*	.22	-.48**	.05
Occupation	.20	-.08	-.03	-.43**	.08
Father					
Age	.12	-.24*	.30**	.19	-.28*
Education	.12	-.13	.14	-.61**	.08
Occupation	.17	-.00	.00	-.51**	-.03

* $p < .05$, ** $p < .01$

(d) Family Factors and Parent Mental Health

Family social environment was not found to be associated with parents' mental health condition. However, parenting discipline practices (DPDP) were positively correlated with parents' scores on General Health Questionnaire (GHQ). Those parents who reported high scores in GHQ also scored higher on DPDP, overreactivity, and lax parenting styles, $r(74) = .32, 42, p < .05; 23, p < .01$.

(e) Family Factors and Caregiver Variables

Few significant correlations were found between family social environment and caregivers variables (i.e., mental health status, interaction with children and job satisfaction). Intellectual cultural orientation in the family was correlated with harsher caregiver interactions, whereas achievement orientation was related to detachment and caregivers' GHQ scores were associated with organization, $r(74), -.26, -.27, p < .05; -.36, p < .01$. The results indicated that children who came from families that reported a more intellectual cultural orientation and achievement orientation were more likely to have their children cared for by caregivers who reported less harsh and detached interactions with the children. Children who came from families that were well organized, were more likely to enrol their children where workers reported fewer symptoms of mental distress.

In relation to the association between parenting discipline practices (DPDP) and caregivers variables, the results suggested that total DPDP scores and verbosity were negatively associated with detachment, $r(74) = -.24, p < .05; -.34, p < .01$. This means that children whose parents reported more laxness, verbosity and overreactivity in parenting discipline practices in the family were likely have caregivers that had less detached interactions with them in child care.

(f) *Quality Child care and Caregiver Variables*

Quality child care was not correlated with caregivers' job satisfaction. However, there were significant relationships between quality care and other caregiver variables. Table 6.4 summarises the association between total overall classroom quality (measured by ECERS-R), group sizes and caregiver variables. First, ECERS-R scores were negatively associated with caregivers mental distress. That is, higher quality classrooms tended to have caregivers with lower levels of mental distress. Second, higher scores in ECERS-R and Group size 1 (10-20 children) were positively associated with sensitive interactions but negatively correlated with scores on the detached and harsh interactions subscales. In other words, caregivers who worked in higher quality class rooms with fewer children, were found to be more sensitive, less harsh and less detached. Third, caregivers who worked with group of children ranged 21-30 children were found to display less sensitivity but more detachment. Finally, children in the larger group sizes (31-40) tended to have harsher interactions with their caregivers.

Table 6.4

Correlation between quality care and caregivers variables

	GHQ score	Sensitivity	Detachment	Harsh
ECERS-R scores	-.24*	.46**	-.79**	-.16
Group size 1	.15	.51**	-.32**	-.35**
Group size 2	-.18	-.46**	.37**	.08
Group size 3	.04	-.15	.06	.56**

* $p < .05$, ** $p < .01$

(g) Quality and Quantity Child care and Parent Mental Health

Correlation analyses showed that the quality of child care as measured by ECERS-R scale and group size and different measures of the amount of time in child care were not associated with parents' mental health status.

(h) Quantity care and Caregiver Variables

Similarly, correlation analyses indicated that different measures of the amount of time in child care were not correlated with caregivers' mental health status, interactions with children or job satisfaction.

(i) Caregivers Interaction and Verbal Ability

There was no association between caregivers' interaction styles and child verbal ability measures. In other words, the ways in which caregivers interacted with children (e.g., harsh and sensitive) were not related to children's scores on the verbal ability measures.

(j) Caregivers Interaction and Psychosocial Adjustment (SDQ and ASBI)

Table 6.5 shows that there were significant associations between harsher interaction styles and children's psychological adjustment measures. Harsher interaction styles were positively associated with higher conduct problem scores and peer problem scores, but negatively associated with pro-social subscale scores.

Table 6.5

Correlation between caregivers interaction and psychosocial adjustment (caregiver rating)

Variables	1	2	3	4
Harshness	.31**	.28*	-.25*	-.24*

Note: 1 = Conduct Problem -SDQ Scale; 2 = Peer Problem –SDQ Scale; 3 = Pro-social -SDQ Scale; 4 = Pro-social - ASBI Scale.

* $p < .05$; ** $p < .01$

(k) Mental Health (parent) and Child Development

There was no evidence of an association between parental mental distress and developmental outcome measures (i.e., measures of verbal ability and social behaviour). The results disconfirmed the hypothesis that high parental mental distress would be associated with lower cognitive and social behavioural scores.

(l) Mental Health (caregivers) and Verbal Ability

There was some evidence that caregivers mental distress was moderately associated with child verbal ability scores, $r(74) = -.47; p < .01$. The negative correlation indicates that lower scores in overall verbal ability were related to higher GHQ scores amongst caregivers. This result confirmed the hypothesis that children placed in the care of caregivers with greater mental distress would have lower levels of cognitive development.

(m) Mental Health (caregivers) and Psychosocial Adjustment – SDQ and ASBI

Caregivers mental health status was not associated with any measures of child psychosocial adjustment.

(n) Job Satisfaction and Verbal Ability and Psychosocial Adjustment – SDQ and ASBI

Caregivers' level of job satisfaction was not related to child verbal ability and social behavioural measures.

In summary, the results of univariate and correlation analyses provided little evidence that the newly introduced parental measures were related to child developmental outcomes, but some associations were observed for caregiver variables. As in the previous studies, these relationships were examined again using multiple-regression analyses to determine whether the relationships still held after controlling for other factors.

6.4 Multiple Regression Analyses (MRA)

The above mentioned correlation analyses supported two predictions. First, harsh caregiving would be associated with lower scores on psychosocial measures. Second, higher mental distress scores as reported by caregivers would be related to lower scores on children's verbal abilities. By contrast, there was little evidence that parental mental health or caregivers' job satisfaction were associated with child cognitive and social development.

6.4.1. Caregiver interactions and social behaviour

The first set of multiple regression analyses examined whether harsh interactions between caregivers and children were related to child psychosocial behaviour (Table 6.6).

Harsher interactions with caregivers were associated with higher SDQ conduct problems scores as rated by caregivers.

Table 6.6

Hierarchical regression analysis: SDQ conduct problems scores (caregiver rating) as predicted by the caregivers interaction (N = 63)

Conduct Problems scale					
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Demographic background					
Age of mothers				<1	.08
Age of fathers				<1	.03
Mothers' educational levels	.01	.01	<1	-1.24	-.21
Step 2					
Quality care					
Group size 1				<1	.06
Group size 2	.01	.00	1.75	1.88	.25
Step 3					
Family social environment					
Intellectual cultural orientation	.07	.06	5.01*	-2.23*	-.31
Step 4					
Harshness	.13	.06	4.91*	2.21*	.32

* $p < .05$; ** $p < .01$

6.4.2. Mental health and verbal ability

The correlation analyses showed that the mental health status of caregivers was negatively associated with child cognitive development. In this multiple regression analyses the association was analysed further by controlling other variables that showed associations with caregivers mental health scores. Variables that were found to have

association with caregivers GHQ scores included the age of child (entered in Step 1), demographic background – parents’ educational and occupational levels (entered in Step 2), ECERS-R scores (entered in Step 3), and family social environment – organization (entered in Step 4). After caregivers’ GHQ scores were entered in the regression models, the results showed that it was not a significant predictor of child verbal ability.

6.4.3. Interaction term analyses

A final goal of Study 3 was to investigate the interaction between different measures of amount of time in child care (DPW, HPD, HPW, NM and TH) and caregiver interactions on child developmental outcomes. Specifically, these analyses examined whether the different measures of quantity child care might significantly interact with harsh caregiving to predict child social developmental outcomes. The interaction term analyses were undertaken using methods very similar to those described above except that the interaction term was entered on the final step after the main effects of the variables had been entered. As in Study I and Study II, five sets of interaction terms were created and analysed. In every set and in each analysis, harsh interaction was examined as a cross-product with each of the five different measures of amount of time in child care in relation to each of the SDQ subscales.

The results of these analyses suggested that harsh interaction was found to moderate the relationships between measures of amount of time in child care (i.e., HPD and HPW) and child developmental outcomes. These findings are illustrated in Table 6.7 – 8.

On the whole, the results supported the hypothesis that children who spent more amount of time in child care had lower scores on the social behavioural measures when caregivers had harsher interactions with children. The results indicated that harsh caregivers interactions were likely to be related to higher ratings on the Emotional Symptoms Scale and low ratings on the Pro-social Scale when children attended child care for more HPD and HPW. In summary, spending higher HPD and HPW in child care was associated with low social behaviour ratings for children who received harsher caregiving from their caregivers.

Table 6.7

Hierarchical regression analysis for the moderating effect of harsh interaction on the relationship between HPD and SDQ emotional symptoms scores as rated by caregivers (N = 56)

	Emotional symptoms scale				
	Adj-R ²	Δ-Adj-R ²	F	T	β
Step 1					
Age of children	.00	.00	<1	-.99	-.13
Step 2					
Demographic background					
Mothers' age				<1	-.05
Mothers' occupation				<1	-.02
Mothers' education				<1	.17
Fathers' age				<1	-.01
Father' occupation				<1	-.09
Fathers' education	-.03	-.03	<1	<1	-.24
Step 3					
Hour(s) in a Day –HPD	-.04	-.01	<1	<1	.05
Step 4					
Harsh Interaction	.01	.05	4.13*	-2.03*	-.33
Step 5					
HPD X Harsh Interaction	.23	.22	14.41**	3.79***	.48

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 6.8

Hierarchical regression analysis for the moderating effect of harsh interaction on the relationship between HPW and social adaptive behaviour scores rated by caregivers (N = 61)

	Pro-social scale				
	Adj-R ²	Δ-Adj-R ²	F	t	β
Step 1					
Age of children	.01	.01	1.65	1.28	.16
Step 2					
Demographic background					
Mothers' age				<1	-.01
Mothers' occupation				-2.15	-.42
Mothers' education				<1	.21
Fathers' age				<1	-.09
Father' occupation				1.63	.53
Fathers' education	.04	.03	1.31	-1.56	-.51
Step 3					
Hour(s) in a Week -HPW	.02	-.02	<1	<1	.02
Step 4					
Harsh interaction	.00	-.02	<1	<1	-.03
Step 5					
HPW X Harsh interaction	.09	.09	5.91*	-2.43*	-.32

* $p < .05$; ** $p < .01$

Figure 6.1– 2 show the relationships between HPD and HPW for child social behavioural measures. In order to construct these figures, participants were divided into two groups based on a median split of harsh interaction measure scores. The figures (Figure 6.1 – 2) suggest that the greater the caregivers interacted harshly with children in their classroom, the higher the children were rated in Emotional symptoms subscale and lower in Pro-social subscale especially when children attend child care with high amount of hours in a day and in a week. Thus, long hours of child care is detrimental for

child cognitive and social development when children are exposed to harsher caregiving styles.

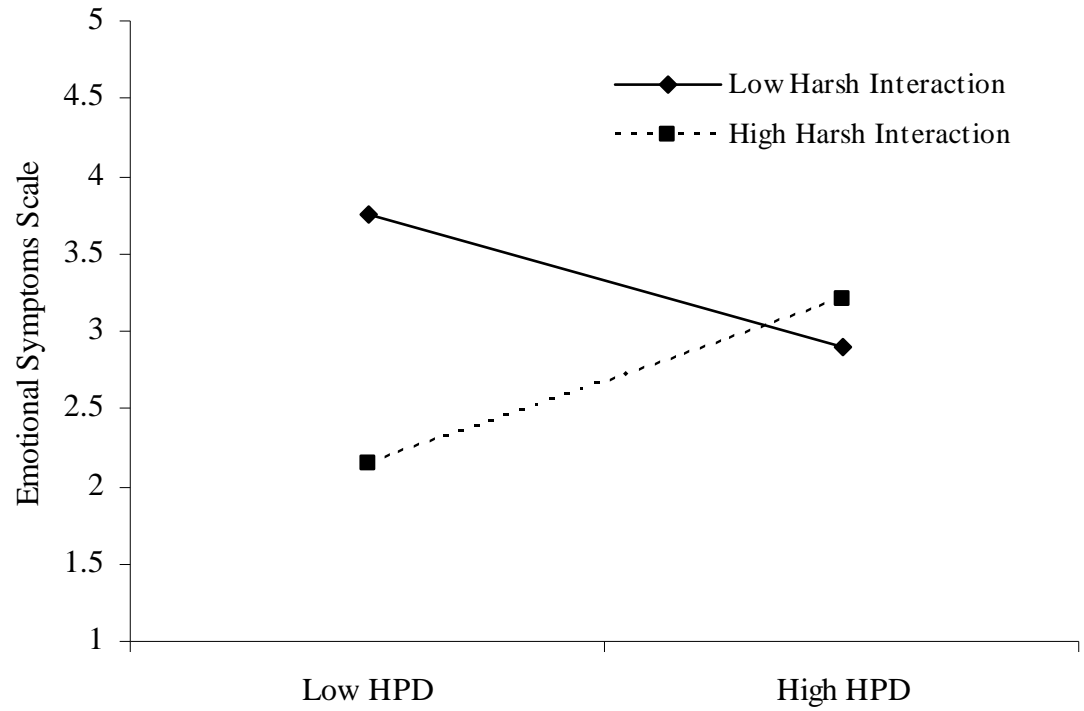


Figure 6.1: The Relationship between HPD and Emotional Symptoms Scale for High and Low Harsh Interaction

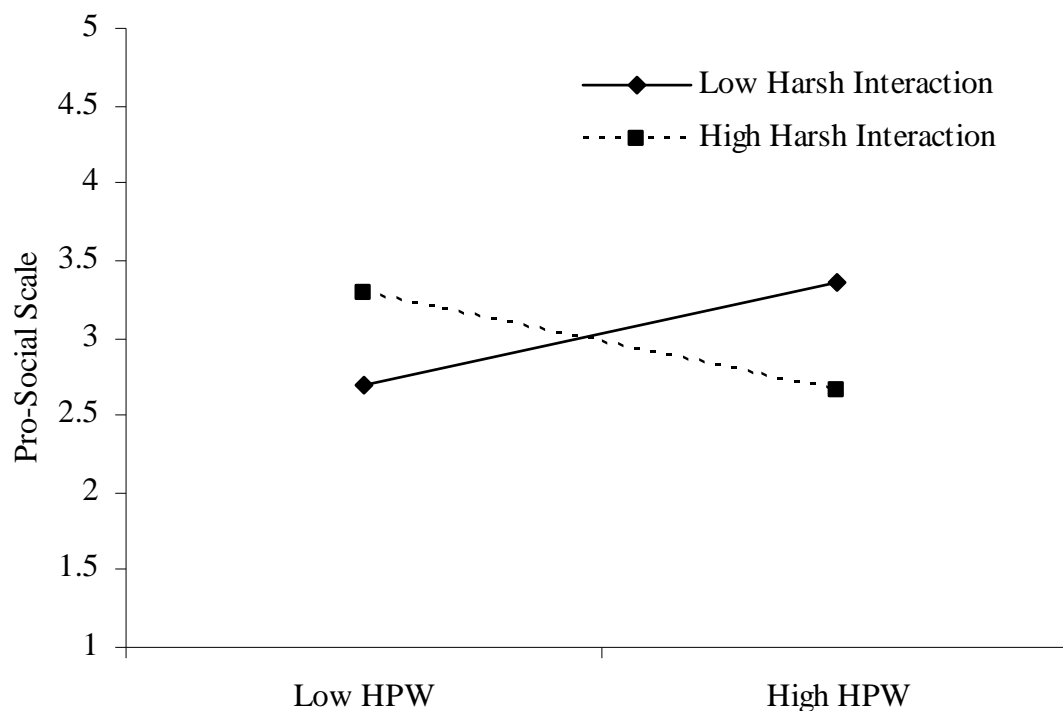


Figure 6.2: The Relationship between HPW and Pro-Social Scale for High and Low Harsh Interaction

6.5 Discussion

The aim of Study 3 was to address a number of concerns relating to child care, in particular whether the characteristics of care-givers or parental mental health status has any direct affects on children's psychosocial or cognitive development, or whether these factors act as moderators. The results generally provided little support for these hypotheses. Although the mental health status of caregivers were initially found to be related to some child outcomes, these associations are likely to be confounded by other factors. These relationships did not exist once other variables had been controlled using regression analysis.

In contrast to the other predictor variables, a harsher style of interaction continued to have significant effects on child social behaviour even after controlling for

other factors. These findings are consistent with earlier studies that showed that the ways in which caregivers interact with children under their care can have significant predictive effect on child developmental outcomes. Children learn social behaviour through modelling (Bandura, 1977), they observe how adults interact with them and their peers in the group. Adults (i.e., caregivers) who show hostile behaviour such as shouting at children who misbehave, create an example to other children of how to act when they feel irritated by someone's behaviour. Therefore, children who were cared for using this type of interaction are more likely to imitate the same behaviour (i.e., shouting). By contrast, adults who show warmth and affection in dealing with problems are more likely to encourage similar less aggressive means of resolving disputes in children.

Another significant finding in Study 3 was the fact that the association between the amount of time in child care and child developmental outcomes were evident only for children who were exposed to harsher caregivers at child care. These children were reported to display more emotional symptoms at home and poorer pro-social behaviour in the classroom. Taken together, the results from regression and interaction term analyses suggested that harsh interaction from caregivers has disadvantages for all children and in particular, children who attend high amount of hours in a day and in a week. Therefore, it is important to educate caregivers about the importance of positive caregiving techniques in order to develop sensitivity in their interactions with children. Research has shown that caregivers who use more positive caregiving processes after training displayed improvement in child caring skills and this led to better developmental outcomes in children (Rhodes & Hennessy, 2000).

The results of the main and interaction effects show that children with poorer social development scores tend to be exposed to a harsher style of interaction by their care-givers. Although this association may only exist because less socially adept children attract harsher styles of interaction, the causation can also work the other way. That is, as based upon studies of social learning and modelling (Bandura, 1977), children who are exposed to more aggressive behaviours may tend to imitate these behaviours in their interactions with others. Such children may also be less likely to gain opportunities to develop an understanding of themselves and others. Interactions that are characterized by warmth, personal respect, individuality, positive support, and responsiveness have been found to be associated with greater self-esteem, compliance with caregiver demands, social competence, internalized moral standards, and cognitive competence (Clark-Stewart, Vandell, Burchinal, O'Brien, & McCartney, 2002; Pianta & Nimetz, 1991; Pierce, Hamm, & Vandell, 1999). By contrast, interactions that are colder, involve open hostility or rejection by caregivers may contribute to greater emotional distress, aggression, and delinquency in children and young people (Hestenes, Kontos, & Bryan, 1993; Holloway & Reichhart-Erickson, 1988; Howes et al., 1992; McCartney et al., 1997).

Harsher or more authoritarian interacting styles are considered less effective because of the failure of caregivers to exercise appropriate level of control and convey warmth, nurturance, and feeling of acceptance to children (Arnett, 1989; Love, Ryer, & Faddis, 1992). Harsh interaction as measured by the Caregiver Interaction Scale (Arnett, 1989) describes caregivers who are critical of children, place an excessively high value on obedience, speak to children in an irritable way, punish without explanation, find fault easily with children, prohibit many of the things that children want to do, expects the children to exercise self control and are unnecessarily harsh

when scolding or prohibiting children. Children who are treated this way may only engage in prosocial behaviours to avoid punishment and not because they are intrinsically motivated to behave this way. As a result, when the authority figures are not around to impose punishment, children may have higher level of antisocial or maladaptive behaviours. In contrast, when caregivers practise appropriate levels of control, which is just enough to induce compliance, most children will continue to behave pro-socially even when authority figures are not available. Therefore, in encouraging positive self development, it is necessary to encourage caregivers to avoid a harsh style of interaction in order to promote in children a self-motivated adherence to socially acceptable behaviour.

Other predictor variables were generally not found to be associated with children's cognitive and social developmental outcomes. Moreover, there was also no interaction between amount of time in child care and these predictor variables on child developmental outcomes. One reason for this lack of association and the divergence between this study and others that have examined this link is that the majority of parents in this study reported lower symptoms of mental distress in comparison to clinical patients. The level of and variability of mental distress reported by parents in this study may have been insufficient to give rise to any significant statistical effects as compared with what might have been found if one had included clinical cases (Steinhausen et al., 2006). At the same time, the findings suggest that everyday levels of distress are probably insufficient to give rise to detectable differences in children's developmental outcomes.

Similarly, the lack of a significant relationship between a sensitive style of caregivers' interaction and child developmental outcomes in all analyses (i.e.,

correlation, hierarchical regression and interaction term) may also be due to the low level of variability of sensitiveness among caregivers. In previous studies, studies have tended to include children from a wider range of ethnic backgrounds that may vary more strongly in terms of the quality care experiences. For example, in a study by Burchinal (2003), average total scores on the Early Childhood Environment Rating Scale (ECERS) ranged from 1.7 to 6.6 for White; 2.7 to 6.4 for African American; and 2.4 to 6.3 for Hispanic. Further, the Caregiver Interaction Scale (CIS) total ranged from 1.4 to 3.8 for White; 1.7 to 3.7 for African American; and 1.6 to 3.8 for Hispanic (Burchinal & Cryer, 2003). In contrast, even lower SES children who participated in the current study attended child care centres that were nationally accredited. Such child care centres usually during the time between accreditation and depends on the level of accreditation tend to provide relevant training for their staff. As indicated in the literature, this training may have been sufficient to develop more effective caregiving skills in caregivers and the centre itself may have deliberately selected staff whose abilities were consistent with the standards expected (Rhodes & Hennessy, 2000). Thus, unlike Burchinal and Cryer's study (2003), the low variability in caregivers' sensitive interactions in this study may have been sufficient to preclude any significant effects.

Further, the lack of a significant association between caregivers' job satisfaction and child developmental outcomes may also be due to a combination of factors. One possibility is that caregivers may likely keep their job-related concerns separate from their work with children. This conclusion is in line with research in the USA and Australia that has shown that workers can be dissatisfied with their salaries, but continue to enjoy interacting with children (Kontos & Stremmel, 1988).

In conclusion, Study 3 offers another support to Bronfenbrenner's Ecological System that child care variable has predictive effect on child social development. Consistent with literature, a harsher style of interactions between caregivers and children were found in this study negatively influenced child social development. Children who were cared by caregivers who were rated high in harsh interaction scale were scored high in conduct problems scale. In terms of interaction effect, results Study 3 revealed that amount of time spent in child care significantly interact with a harsher style of interaction that children experienced from their caregivers. The results suggested that children who spend high amount of hours of care in a day and in a week were rated low in social behavioural measures when they experienced a harsher style of interaction.

Chapter 7: Discussion and Conclusion

7.1. Introduction

Bronfenbrenner's Ecological Systems theory proposes that child development is influenced by different systems interconnecting between one another (Bronfenbrenner, 1979). A large amount of research has been conducted to understand how social factors (or "units" in Bronfenbrenner's terms) such as family and school influence child development. More recently, this type of research has been extended to examine the effects of non-maternal care (i.e., child care) on children's cognitive and social development. As outlined in earlier chapters, research in this area has not always converged on a single or clear conclusion because the effects of child care have been found to vary depending upon the nature of the children involved, the experiences of the children in child care (i.e., structural and process features, time spent in child care and type of care) and the characteristics of the family of origin (e.g., their socio-economic status, maternal education and sensitivity, marital status) (Belsky & Braungart, 1991; NICHD Early Child Care Research Network, 1996, 2005o; Peisner-Feinberg et al., 2001). As discussed in Chapters 3-6, the complexity of these different factors can lead to inconsistencies in findings if research designs do not take potentially confounding factors into account. Accordingly, one of the principal aims of this research was to extend the understanding on the effects of child care on child development by using a multivariate approach that examined the importance of specific factors while also controlling for other factors (e.g., family background, the quality of care) that are known to influence child developmental outcomes.

The first two studies examined the association between different measures of time in child care on child development. The results indicated that, with the exception of the number of months in child care (NM), spending more time in care as operationalised in terms of the number of days per week, was negatively associated with some measures of child social development. For example, children who spent more days a week or hours in a day or hours in a week were rated by caregivers and parents as being more hyperactive and having more conduct problems. In contrast, those children who had experienced child care for a greater number of months were rated by their caregivers as having fewer emotional symptoms in the classroom. These results, in particular the effect of HPW, were generally consistent with findings obtained in the USA (Baydar & Brooks-Gunn, 1991; Belsky, 1988; Campbell et al., 2000; NICHD Early Child Care Research Network, 1998a, 2005q) and Australia (Harrison & Ungerer, 2000) which has similarly shown positive associations between higher amounts of time in care and poorer psychosocial outcomes. These findings were obtained both in the initial study and also when the same series of analyses were repeated when children were six months older. By contrast, less consistent effects were obtained for the cognitive measures. The number of HPW was found to be related to naming vocabulary scores in Study 1, but not in the six month follow up study. These findings are generally consistent with previous studies that have similarly found only limited, if any, support for an association between HPW in child care and cognitive abilities. For example, results from the Wave 1 of Child Care Choices project in Australia indicated that the number of hours spent in child care was not associated with children's language and communication skills (Bowes, 2003). Similar results have been reported by the NICHD studies conducted in the US.

There are possibly a number of reasons why spending a higher number hours per week in child care could negatively affect children's social behaviours. One possibility is that daily separations from primary care givers can lead to the development of insecure attachment behaviour among infants (Belsky & Rovine, 1988). The more limited time spent at home during the evening might be insufficient to establish strong emotional bonds between mothers and their children because of other competing demands. Moreover, if parents spend less time with their children during weekdays and are tired when they return from work, children may experience less sensitivity and responsiveness in their interactions with parents. As Belsky (1988) has argued, if infants spend much of their early life in child care and this continues through toddler-hood, it is possible that insecure attachments that develop early in development will persist over a longer period. Such experiences can lead to the development of aggressive and non-compliant behaviour during preschool and early school-age years. Greater child behavioural problems and poorer social competence has been found to be associated with the HPW even after controlling for the quality of care. (Campbell et al., 2000; NICHD Early Child Care Research Network, 2005i, 2005q). Although the present research did not examine maternal sensitivity and responsiveness, the research showed that the effect of HPW was moderated by other family related variables including parenting style and family social environment.

In line with previous studies that have found that the number of months in care can have a positive influence on child cognitive development (Broberg, 1997 Sylva 2003), the results in the present research indicated that NM can also benefit child social development. Children who had spent a greater number of months in care had lower emotional symptoms scores. While this may be related to the greater opportunity for children to interact with other children in a structured environment, these findings might

also reflect the specific programmes and curricula provided by child care centres in South Australia. In South Australia, centres are required to provide activities that are consistent with seven learning areas set out in the South Australian Curriculum Standard and Accountability (SACSA) Framework (DECS, 2001). These seven learning areas include: self and social development, art and creativity, communication and language, design and technology, diversity, health and physical education and understanding outside world.

On the other hand, the lack of a significant association between NM and child cognitive development found in this study could possibly be due to the age profile of the sample. In previous research by Broberg, the NM in care has been found to be unrelated to children's scores on cognitive measures when the children were assessed at three years old, but a follow-up study undertaken when the children were eight years old showed that a higher number of months children in child care was associated with higher score in cognitive measures (Broberg et al., 1997). That the same variable did not appear to be a significant predictor of high verbal ability scores in the current research could be due to the fact that the children sampled were typically 3 ½ to 4 ½ years of age. There was no opportunity at this stage of the research to determine if whether a more significant effect for the NM variable would be obtained if same analyses were repeated when the children were older.

The research also showed that the quality of child care (i.e., as reflected in the structural features and nature of caregiver interactions) was also significantly associated with child developmental outcomes. Both the size of groups as well as the nature of the care-givers' interactions with children appears to be related to child social development. These findings support earlier research that has shown that child care with smaller

group sizes can have a more positive effect on children's developmental outcomes than larger groups (Howes et al., 1992; NICHD Early Child Care Research Network, 2000a, 2005g). There is research evidence to support that centres that have smaller groups sizes that comply with the recommended standards (i.e., as specified by the American Public Health Association's and American Academy of Paediatrics - APHA & AAP, 1992) tend to yield more positive outcomes in terms of social development as reflected by fewer behaviour problems and more cooperative behaviour (NICHD Early Child Care Research Network, 1999, 2005c). The current study failed to show that larger group sizes (21-30 children) were associated with more negative social developmental outcomes, but it was found that smaller group sizes (10-20 children) were associated with more pro-social behaviours than children in the 21-30 group.

With respect to care-giver interactions, the findings confirmed that a more harsh style of interaction between caregivers and children in child care is associated with higher scores on child conduct problems. These interactions tend to be characterised by a tendency to punish children without explanation, threaten children, speak to children in an irritable way, place high value on obedience and a number of interactive styles characteristic of authoritarian parenting. Although most caregivers generally used a more sensitive style of interaction, there was a small number of care providers who reported relying more predominantly on harsher care-giving styles. Relatively few studies have examined the role of care-giving style on child outcomes, but studies that have examined the relationship between children (at kindergarten and school age) and their teachers have indicated that negative relationships with kindergarten teachers are associated with low pro-social and more aggressive behaviour at primary school (Birch & Ladd, 1998).

Similar analyses were also undertaken to examine the effects of care-giver sensitivity on child development, but few significant results were observed. These findings are inconsistent with previous studies that have found positive associations between the sensitivity of interactions and better developmental outcomes (Burchinal & Cryer, 2003; Peisner-Feinberg et al., 2001). A possible reason for the lack of significant associations in the present study may relate to the nature of the caregiver interaction scale (CIS) utilised (Arnett, 1989). The caregiver interactions assessed by this scale relate to the quality of interactions between a caregiver and group of children. It is not a measure of one-to-one interactions (i.e., between one caregiver and one child). Moreover, given that caregivers were working in nationally accredited child care centres and reported generally high levels of sensitivity, the ability to detect variations due to variability in interactions with individual children may have been limited. All children in the same group and between centres could have been exposed to similar styles of interaction, so that there may be a need in future studies to utilise more refined measures (e.g., linear mixed models) that model interactive styles at a group level variable to examine how differences between centres influence overall child outcomes. Alternatively, if similar analytical strategies are used, it may be useful to utilise measures that are better able to capture the nature of the interactions between care-givers and individual children. NICHD studies have indicated significant results of using measures such as the ORCE scale (Observational Record of the Caregiving Environment) in predicting child development (NICHD Early Child Care Research Network, 1996).

Contrary to expectations, there was no significant relationship between overall classroom quality (i.e., measured by ECERS-R) and child developmental outcomes. In other words, overall classroom quality did not predict children's cognitive and social

development. The lack of relationship between overall classroom quality and child development could be ascribed to the lack of sensitivity of the measure due to the limited variability between child care centres. It has been found (Lamb, 2000) that when the quality of child care between centres is less varied, the ECERS-R is less effective as a measure and so it is less likely that one would discern any meaningful effects on child development. By contrast, more significant results are likely to be obtained when child care centres vary in quality such as in the studies conducted by Burchinal where ratings ranged from poor to mediocre (Burchinal et al., 1996) or poor to excellent (Burchinal et al., 2000a).

Another facet of this research was to examine the effect of family background characteristics on child development (Ackerman-Ross & Khana, 1989; NICHD Early Child Care Research Network, 1997a, 2005k, 2005m; Peisner-Feinberg et al., 2001). The results showed that particular elements of the home environment (e.g., family conflict, cohesion and expressiveness dimensions) and parenting discipline practises (total score and lax parenting style) were negatively associated with child social development. These findings were obtained even after controlling for family demographic background and child care experiences, overall classroom quality (i.e., measured by ECERS-R) and the amount of time spent in child care.

Consistent with earlier studies that have examined the effect of family conflict on child development, the results showed that this characteristic of the home was a significant predictor of problematic child behaviour (Harden et al., 2000; Koblinsky et al., 2006; Linares et al., 2001; Ramos et al., 2005). High family conflict was associated with higher peer problem scores, disruptive behaviours and total SDQ scores. These associations may exist because family interactions exert an important influence on

children's behaviour by conditioning and social learning. If children observe arguments and aggression between their parents, they are more likely to imitate this behaviour and display negative social behaviour towards others in other contexts (McCloskey, Figuerdo, & Koss, 1995).

In addition to family conflict, parenting discipline practices (DPDP) were also a significant predictor of child social development. Despite being placed into quality child care, the results suggest that the way parents discipline their children can significantly influence child social behaviour especially when children enter child care after one year of age (Howes, 1990) as was the case in the current study. Parents who reported more lax parenting styles and who scored high in the total score of DPDP scale tended to have children with less adaptive social behaviour. In contrast, parents who usually set clear rules and gave their children clearer expectations that were developmentally appropriate were more likely to have children with higher self-esteem and greater social competence. On the other hand, if parents use parenting styles that could be described as lax, over-reactive or verbose, children are more likely to be exposed to rules and expectations that are incompatible with their developmental age. For example, lax parents may leave their children without proper guidance so that children may be confused about appropriate behaviour and be less social competent.

A final objective of this study was to examine the effects of different measures of time in care on child developmental outcomes and how these interacted with other variables. On the whole, HPW was found to be more influential in the interaction term analyses than DPW. The results showed that attending high amount of hours in child care is beneficial for child social development (i.e., rated higher scores in prosocial and lower scores in peer problems measures) when children came from families that

reported high expressiveness and practising laxness, verbosity and overreactivity parenting discipline strategies. However, attending child care for many hours per week was less beneficial in terms of child social development when children experienced a harsh style of interaction with caregivers in the classroom or when children experienced conflict in their families. A possible explanation for this result is that when children receive lax, verbosity and overreactivity parenting discipline styles at home, attendance at a high quality child care that is nationally accredited would give children opportunities to build their social skills as a result of their exposure to more appropriate discipline strategies. Such effects were not observed if children were being exposed to higher levels of family conflict. For those children, it appeared that less adaptive behaviours developed at home would be reproduced while they were at child care (e.g., fighting with peers, aggressive behaviours).

A reason why more harsh interactive styles can lead to poorer psychosocial adjustment is that children find these interactions more stressful (Sims et al., 2005, 2006). Sim and colleagues' (2005, 2006) have conducted analyses that have shown an association between the quality of child care and cortisol reactivity. Caregivers who promote secure attachment relationship with children are less likely induces stress and so that cortisol levels will tend to remain at their natural resting states. On the other hand, if carer providers are hostile or not sensitive to the individual needs of children, children are more likely to experience stress and this is reflected in higher cortisol levels. If such reactivity occurs over a prolonged period, it can exert a negative influence on children's health and well-being (Kristenson, Erikson, Sluiter, Strake, & Ursin, 2004; White, Gunnar, Larson, Donzella, & Barr, 2000).

On the whole, only a relatively small number of moderation effects were observed in this study. One reason for this is that the sample size was relatively small compared with other large funded international studies. For example, Burchinal (2000b) found using a sample of 1307 children that quality child care had more significant effects on African-American children than White-non Hispanic children (Burchinal et al., 2000b). Another study by Peisner-Feinberg and colleagues' (2001) involving 733 children found that maternal education moderated the relationship between the quality of child care and child development (Peisner-Feinberg et al., 2001). Another factor may have been the homogeneity of the current sample. Although the families in the present study were from different socioeconomic backgrounds (i.e., high, middle and low socioeconomic areas), the sample lacked variability in terms of its socio-cultural background. Most participating children were European Australian and did not originate from higher risk families where children might have been exposed to abuse or poverty.

7.2. Policy implications

7.2.1 Amount of time in child care

The finding that spending many HPW in child care can contribute to poorer social behavioural outcomes has a number of implications for how child care is used. While previous studies have attempted to define an appropriate upper limit on the amount of time in care, e.g., 20 hours (Belsky & Rovine, 1988) or 30 hours (Vandell & Corasaniti, 1990), there is other evidence to suggest that there is no threshold limit of hours in week in child care that predicts poorer social development (NICHD Early Child Care Research Network, 2003c, 2005q). Parents should be encouraged to seek flexible working arrangements and these work arrangements need to be supported by employers and peak bodies and governments. Flexible arrangements could include flexible working hours, permanent part-time job, shift work and work at home. Flexible

working hours and permanent part-time work are the most frequently used among employed women with children (ABS, 2006b). Longer periods of paid maternity leave may also be beneficial to working mothers and particularly those who have infants. Such situations exist, for example, in Sweden, where every working woman is entitled to long-term paid statutory maternity leave (Waldfogel, 2006) and young children are taken by their own mothers and only begin child care after one year of age. Such arrangements, as research has shown, can lead to an attenuation of the effects of higher number of hours per week in child care on child developmental outcomes (Andersson, 1989, 1992; Broberg et al., 1997; Campbell et al., 2000). On the other hand, there are countries such the US which has 12 weeks of unpaid maternity leave which forces mothers to commence child care for their newborns at a very early stage (U.S. Census Bureau, 2005). For example, the NICHD studies indicated that 1,364 infants enrolled in the study started regular child care in the first 12 months of life and that the average age at which the infants entered child care was 3.11 (NICHD Early Child Care Research Network, 2005b). Furthermore, the children not only entered child care early but also spent extensive amount of time in child care. For instance, those infants in the NICHD study spent an average of 29 hours in child care each week. A number of studies in the USA have indicated that extensive amount of care was the significant predictor of child behaviour problems from early childhood until elementary school (12 years old. third grade) (Baydar & Brooks-Gunn, 1991; Belsky & Rovine, 1988; NICHD Early Child Care Research Network, 2005i, 2005q).

Different conclusions apply to the number of months that children spend in child care. Since the number of months in care tends to be associated with an earlier entry into care, it has been found that early entry has few detrimental effects on child development. However, there is evidence that an earlier entry into child care can be

associated with poorer long term outcomes because of disruptions to early maternal attachments (Baydar & Brooks-Gunn, 1991; Belsky, 1988; Belsky & Rovine, 1988; NICHD Early Child Care Research Network, 2005q). The findings of the current study are therefore difficult to interpret in the context of these two competing findings.

Although spending more months in care would appear to be beneficial to some areas of development as long as children do not spend many hours per week in child-care, this study had only a relatively short time-frame. It is unclear whether the benefits would persist if the study were to be extended for longer periods until when the children were older.

7.2.2 Quality child care

The study was also designed to generate data relevant to discussions concerning the elements that constitute higher quality care. As indicated, these debates are somewhat context bound in that the overall quality of child care can be influenced by broader political factors (what Bronfenbrenner terms ‘the exo-system’), including the mandated maximum group sizes and minimum training requirements of staff. In South Australia, such standards are regulated by the Department of Education and Children Services (DECS). In some ways, the DECS standards are arguably less stringent than the American standards, particularly in relation to group size. According to the American Public Health Association’s and American Academy of Paediatrics - APHA & AAP group size, the recommended standards are: 14 children per staff member for 3 years old as compared with 30-35:1 for 2+ year olds (see Table 2.1). Although the DECS criterion is higher than the recommended group size in the US, the results of this research provided equivocal results in relation to the effects of these larger group sizes on children’s adjustment. Children categorised in group 1 (10-20 children) and group 2 (21-30 children) had more positive psychosocial adjustment than children in the larger

groups. These findings suggest that, while 21-30 does not appear to be a problematic group size, it would be optimal if group sizes of 31+ are avoided and that a group size of 10-20 children be considered in light of the findings in the present study as well as other similar international studies.

7.2.3 Family Characteristics

In this research, family conflict and lax parenting discipline strategies were found to be associated with higher conduct disorder scores even after controlling for the quality and quantity of child care. Family conflict was found to be associated with more problematic child behaviour both at home and in the child care setting. These findings suggest that, even when children are exposed to nationally accredited child care of good quality, they still may show difficulties in their behaviour because of problems that are occurring at home. Although developing interventions to assist families is a separate issue from child care, the findings suggest that helping families manage conflict can have important implications for children's wellbeing. Studies have shown that children who observe arguments and aggression in the family are more likely to exhibit problematic behaviour in other contexts (Koblinsky et al., 2006; McCloskey et al., 1995).

7.3. Limitation and Strengths

A number of methodological issues need to be taken into account when considering the findings in this research. First, although attempts were made to sample children from different child care centres of different sizes and socio-economic profiles, the sample is nonetheless relatively small ($n = 120$ and 74) as compared to some larger international studies and was not obtained from the community using probability sampling techniques. For this reason, some caution needs to be exerted when generalising the findings to all centres in South Australia or to other jurisdictions.

Second, the findings on the effect of the amount of time spent in child care in this research apply to children who attend child care centres. Children who experience other types of child care such as family day care or in-home care may have different experiences that could be associated with different outcomes in relation to the effects of varying amounts of time in care. For example, children who stay with grandparents while their parents are at work may obtain more individualised attention than those in child care centres. As a result, the effects of spending many hours per week in the care of non-maternal carers may be different. For this reason, it may be useful to extend the studies and analyses described in this thesis to children receiving care in a variety of contexts.

Third, this research involved native English speakers so that it is unclear to what extent the findings can be extended to other ethnic groups. A Study in the USA that investigated the effect of quality child care on children of African American demonstrated that overall classroom quality (i.e., measured by ECERS-R) is more important for language development of the children than White-non-Hispanic children (Burchinal et al., 2000b). Therefore, future studies examining the effect of the amount of time in child care rated high on the ECERS-R score for immigrant or non-English speaking children is recommended. On the other hand, based on the US studies, it would be hypothesised that attending quality child care would have even more benefits for immigrant children. However, there is some Australian research by Wise (2003) which suggests that outcomes may be more negative because of the greater disjuncture between the social and cultural environment prevailing at home as opposed to in the child care centre (Wise & Sanson, 2003).

Another methodological limitation relates to the outcome measures. The results of this research show that the amount of time spent in child care appears to exert more influence on child social development than cognitive development. An explanation for these divergent results may be the nature of the cognitive scales used in the current research. All of the measures may not have been sensitive enough to detect the benefits that might arise from being in child care. For example, they may not have tested the type of cognitive abilities most likely to feature in classroom activities. These findings reflect similar inconsistencies in previous studies. For example, the NICHD studies showed that the effect of quality child care (i.e., as measured by the ORCE) on cognitive development is more domain specific (NICHD Early Child Care Research Network, 2003c, 2005o). The greater the emphasis on cognitive activities (e.g., puzzle solving, spatial skills), the greater the likelihood of the child benefiting cognitively from their time in child care. Moreover, stronger effects may be observed when researchers focus on very specific elements of the classroom instruction that relate to the outcome measure being considered. For example, in studies that have specifically focused on verbal interactions between caregivers and children, it has been found that verbal abilities (i.e., language development) were more likely to be predicted by variations in the nature of verbal utterances to which the children were exposed (McCartney, 1984).

It is also important to recognise several strengths of the current project. First, this research used different quantitative research techniques including questionnaires, observations and psychological testing to establish a comprehensive data collection strategy to investigate the principal hypotheses. Each of the measures was carefully chosen for the particular predictor variable of the specific participants (i.e., parents or children or caregivers) being investigated. Therefore, this research was more likely to be able to show a clear link between predictor variables (i.e., different measures of time in

child care, family variables and features of quality child care) and children's developmental outcomes according to who reported it (parents or caregivers). Second, the study investigated the effect of different amount of time (days in a week; hours in a day; hours in a week; number of months and total hours) on child development in one study. Previous research that has investigated the effect of the amount of time in child care on child development has typically only utilised one measure of time (i.e., hours in a week) (Baydar & Brooks-Gunn, 1991; Belsky & Braungart, 1991; Harrison & Ungerer, 1997, 2000; NICHD Early Child Care Research Network, 2005h, 2005n). In a recent study that compared days in a week and hours in a day, the results showed that different measures of time can have different effects on child social behaviour (Campbell et al., 2000).

Third, in addition to evaluating the main effect of different amount of time in child care on child development, this research also examined the interaction between different amount of time spent in child care and moderator variables (i.e., family and child care) on child developmental outcomes. In other words, the study provided greater information concerning the context in which one is most likely to observe a relationship between important predictor and outcome variables.

A final strength of the study was that it controlled for different confounding variables in same design and provided a replication of the initial findings using a subset of the original sample six months later.

7.4. Directions for future research

Earlier studies have indicated that structural and process features in child care as well as the amount of time spent in child care can have long term effects on child

development (Belsky et al., 2007; Howes, 1990). However, it has also been found that these effects may take some time to materialise. For example, a study in Sweden found that quality child care predicts cognitive abilities when children were aged eight years old and not when the children were 3 years old (Broberg et al., 1990; Broberg et al., 1997). Similarly, a study in Australia suggested that the amount of child care has no effect on child development at three years of age but showed significant effects for children who were six years old (Harrison & Ungerer, 2000). Therefore, it would be useful if this type of research could be extended to examine the effect of spending many hours in child care on conduct problems at six and eight years old. In addition, it would also be interesting to examine the effect of other significant predictor variables (e.g., family conflict) in the same sample of children in subsequent years.

Another useful avenue for future research would be to elucidate more clearly the reasons why spending a greater number of hours per week in care leads to poorer social development in some children. Similarly, it would be useful to investigate more thoroughly how child outcomes are influenced by interaction styles both in the home environment and in child care. What is the nature of the causality? Do children with more challenging behaviour attract more negative interactions, or do less positive interactions give rise to problematic behaviour, or both?

Finally, it is recommended that the research findings be extended to other countries with different social and cultural characteristics, e.g., Malaysia. As in Sweden, the United States of America, United Kingdom and Australia, Malaysia provides both regulated and non-regulated child care arrangements. Child care arrangements are typically child care centres and family day care centres, whereas non-regulated child care typically refers to babysitters, relatives, friends and grandparents. However, unlike

in other developed countries, Malaysia, to the best of the researcher's knowledge, has not conducted extensive research to examine the effect of child care on child development. Studies among children in child care is mainly related to infants caregivers interactions (Woodson & da Costa-Woodson, 1984; Yaman, 1996) and structural features in child care provisions (Tee, 2005). Therefore, it is important to examine effect of child care on Malaysian children's development, especially the effect of the quantity of child care because working mothers often lack the opportunity to obtain flexible working arrangements (e.g., part-time or casual job). Due to a lack of job flexibility, children are likely to spend higher amount of hours in child care. As discussed in Chapter 2, such comparative studies are essential because the quality of child care provided can be strongly influenced by broader economic, social and political factors prevailing in different countries.

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Appendices

Appendix I (Invitation Letter to Director of Child Care Centres – Study I)



Dear Madam Director,

Re: *Effects of the amount of time in child-care on children's cognitive and social development.*

Effect of child-care on children's development is a very important issue studied by researchers in the field of child development. As a PhD student, who has a strong interest to study about the effect of child-care on children's development, Nazariah Janon who is doing her research under Professor John Taplin's and my supervisions would like to investigate how the different amount of time in child-care affect children's cognitive and social development. This is an important issue because children's development is not only affected by their heredity but also the environmental factors (i.e., family characteristics, childcare and etc). In addition, as both parents go to work and the numbers of parents using long day care centre are increasing, it is significant if a research like this is conducted so that it contributes new knowledge in understanding child development.

A total of 20 child-care centres in Adelaide have been selected at random to participate in the study. As Catholic Women's League Child Care Centre has been selected as a potential participant, I am writing to seek your permission to conduct the study in your centre. I have enclosed Information Sheet which provides more details about the study and the level of involvement of child-care center.

Nazariah's study has received the approval of the Research Ethics Committee at the Department of Psychology (see attach letter) and permission to conduct the study in child-care centre that integrated with Department for Education and Children's Services. Any information which can identify participating children or centres will be kept strictly confidential. No information will be presented in reports in a manner which would enable the identification of participating centres or children. All identifying information will be confidentially destroyed at the completion of the project.

Nazariah will contact you in the next few days in order to discuss the survey and to identify a contact person at your centres with whom she can liaise about the study. If you have any queries, please feel free to contact me directly at the Women's and Children's Hospital (Tel: 8161 6915) or Nazariah (Tel: 04-32283837).

Thank you for your consideration.

Yours sincerely

Dr. Tahereh Ziaian

Research Fellow

Department of Paediatrics

Women's & Children's Hospital

Appendix II (Invitation Letter to Parents – Study I)



School of Psychology
University of Adelaide
Adelaide SA 5001

Dear Parent,

My name is Nazariah Janon. I am a postgraduate student at the University of Adelaide, studying towards my PhD in Developmental Psychology. Title of my thesis is “*Effects of the amount of time in child-care on children’s cognitive and social development.*”

The research invites parents from all cultural backgrounds and their child/children aged 3 ½ - 4 ½ years old to participate in the study.

Some of children aged 2 to 4 spend most of their daytime in child-care while parents are at work. Many studies were conducted to examine the effect of child-care on children’s development. The present study attempts to investigate whether amount of time in child-care influence children’s cognitive and social development. As this is first study of its kinds in Australia, it is hoped that the result will provide insight to parents in understanding development of the children.

Involvement

Your participation will only require completing 15-20 minutes questionnaires at home. Whereas, for your child, the study will require him/her to do 5 to 8 minutes cognitive tasks at the child-care centre during her/his presence.

This research has been approved by the Ethics Committee of The University of Adelaide.

Any information which can identify participating children or centres will be kept strictly confidential. No information will be presented in reports in a manner which would enable the identification of participating centres or children. All identifying information will be confidentially destroyed at the completion of the project.

If you are prepared for your child to take part, a consent form is attached for you to sign. Your prompt respond is greatly appreciated and a reminder will be forwarded if there is no response after two weeks. Should you require additional information regarding this research, please contact me, Nazariah Janon (0432283837); supervisors; Prof. John Taplin (08-8303 5229) and Dr. Tahereh Ziaian (08-8161 6915).

Thank you for considering this request.

Nazariah Janon

Date:

Appendix III (Information Sheet for Director Child Care Centres and Parents – Study I)

Information Sheet for a Study on Effects of Child Care and Children's Cognitive and Social Development

Introduction

The study aims to investigate how amount of time in child-care influences children's cognitive and social development. The study will assess if there are differences in cognitive and social development between children who attend full-day care and half-day care.

The topic is significant to study because previous research has found that children who entered child care before 12 months had better cognitive development than children who stay at home (Andersson, 1989 & 1992). In addition, Broberg et al (1997) discovered that the participation in early child-care that is at least 36 months before enrol in primary school has positive effect during school aged period. However, these studies did not suggest the effect of duration of time in care on cognitive abilities. Can we say children who attend full-time score higher than part-time because they learn more or actually there is no significant different? Since children's brain can absorb a lot of information, spending more time in the child-care that provide appropriate developmental cognitive stimulation predict increasing in the cognitive abilities

In term of social development, Belsky and Rovine (1988) and Schwartz (1983) suggested that high amount of time in child-care increased social behavioural problems. However these researchers had not investigated important factors such as family characteristics or child-care features that can influence the relationship between amount of time in the child-care and social development. NICHD Early Child Care Research Network (1998) found that there is no main effect in the relationship between amount of care and social development. Family characteristics were found to have more significant effect on children's social behaviour. In relation to this, the present study attempts to examine if children in the present study who come from different cultural background and system of child-care also have similar finding or there will be another factor beside family characteristics that is more influential in children's social behaviour.

Methodology

(i) Participants

The participants of the study are: (i) children aged between 2 - 4 years who has enrolled at least last 3 months in the child-care centres; (ii) parents or guardian of the children; and (iii) caregivers.

(ii) Methods of the study

The methods that will be used are classroom observations, cognitive assessment and questionnaires.

Classroom Observation

Early Childhood Environment Rating Scale (ECERS – R) by Harms, Clifford and Cryer (1998) is a scale that will be used during observation in the classroom. The study requires two times of three hours observations in the classroom which the study child belongs to. The scale examines the general characteristics or features of child-care centres.

Cognitive Assessment

Cognitive abilities will be measured by Differential Ability Skills (DAS - Elliott, C. D. 1990). The individual study child will be given 20-30 minutes simple cognitive activities from this test during his/her time in the child-care centre. The test investigates the children's conceptual ability as well as verbal and nonverbal ability.

Questionnaire

(i) Social behaviour

Children's social behaviour will be assessed by two scales; (i) Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and (ii) Adaptive Social Behavior Inventory (ASBI; Hogan, Scott, & Bauer, 1992). SDQ contains 25 items and SDQ consists of 30 items. Parents will be required to complete SDQ, whereas caregivers will be required to complete SDQ and ASBI. SDQ is used to examine the social problems of children and ASBI is used to assess the social competence and disruptive behaviour of the children.

(ii) Family background

Family background and social climate at home are obtained through questionnaires for parents.

(iii) Involvement of participants:

1. Parents will complete questionnaires at home that will take about 15 to 20 minutes.
2. Children will be assessed with 20-30 minutes cognitive tasks at the centre with the researchers.
3. Child-care workers will spend 5 to 10 minutes rating the social behaviours of study children at anytime and anywhere convenient to them.
4. Child-care centre classroom: The researcher will conduct two times of three hours observations in the classroom which the study child belongs to.

(iv) Procedures

To begin, directors of the child-care centres will be approached personally in order to provide brief introduction of the study. If they are interested in participating in the study, researcher will gather list of children aged between 3 - 4 years. Then, parents of the selected children will be contacted through the director of child-care centre in order to explain about the study and how their participation is useful for the study. Attach with the letter from the director is a brief introductory letter from researcher that introduce about the aim and procedure of the study. Once they return the reply slip to caregiver which showing their interest to participate in the study, parents will be contacted and they will be given a set of study materials that contain: Informed consent form, the Demographic questionnaire, Family Environment questionnaire and Strengths and Difficulties Questionnaire. If parents do not return the reply slip after two weeks, researcher will do a follow-up by postcard to remind about the importance of their participation in the study and if they still do not respond after two weeks from first reminder a telephone call will be conducted. Parents who receive the set of study material need to return the informed consent form separately from questionnaires as soon as possible. Once the researcher got consent from parents, the data collection will begin. Children will be administered with the cognitive tests during his/her presence in child-care, questionnaires will be distributed to parents, classroom will be observed and child-care workers will rate the children's behaviour.

Ethical Consideration

The children's physiological and emotional conditions will be given priority and they will not be given assessment until they are ready to be assessed. For example, if a child is sleeping during his/her schedule for cognitive abilities test, she/he will no force to wake-up and gives the test. Researcher will wait until she/he wake-up or schedule another day to administer the test. The same condition is adopted for cognitive assessment. Since the attention span of children is short, children would not force to continue when they feel not interested anymore. Researcher will come again to continue the test administration. Parents will represent children to sign informed consent form. Participants may withdraw from the study at any time they want. The Psychology Department's Ethics Committee evaluates the methods and procedures of the study. Any inquiry regarding ethics can contact the Convener of the Psychology Department's

Human Ethics Subcommittee, Dr. Paul Delfabbro by telephoning (08-8303 5744 or paul.delfabbro@psychology.edu.au).

Appendix IV (Informed Consent Form for Parents – Study I)

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

INFORMED CONSENT FORM*

I (name) _____

hereby consent to _____ (child's name) to take part in the research project entitled: **Effects of the amount of time in child-care on children's cognitive and social development**

I have read and understood the Information Sheet on the above project and understand that (my child/I) is being asked to provide details of what is required of the participant.

I understand that (my child/I) may not directly benefit by taking part in this research.

I understand that while information gained in the study may be published, (my child/I) will not be identified and all individual information will remain confidential.

I understand that I can withdraw (my child) from the study at any stage up until the end of the collection of data.

I understand that there will be no payment for (my child) taking part in this study.

I am aware that I should retain a copy of the Consent Form for future reference.

I consent to (my child) being involved in this project.

Signed: _____

Date: _____

Relationship to child: _____

** Please forward the complete informed consent form to the caregiver of your child.*

Appendix V (First reminder to parents to return informed consent form – Study I and Study II)



School of Psychology
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Study on “Effects of the amount of time in child-care on children’s cognitive and social development”

Dear Sir / Madam,

With reference to the above study, I would like to call your attention regarding my letter that call for your participation in the study. The study is a very important as it will examine the effects of different amount of time spent in child care on Australian children. Although the study is common in other countries, however it is not extensively study in Australia. Your kind consideration to participate in this study is greatly appreciated as it will help parents to understand how attending to child care influence their children’s development.

Therefore, I would greatly appreciate if you could sign the informed consent form and forward it to caregivers’ of your child.

Your participation is highly appreciated

Thank you

Yours truly,

Nazariah Janon
PhD Student

Appendix VI (Second reminder to parents to return informed consent form – Study I and Study II)



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Study on “Effects of the amount of time in child-care on children’s cognitive and social development”

Dear Sir / Madam,

With reference to the above study, I would like to call your attention regarding my second letter that call for your participation in the study. The study is a very essential because it will provide parents with information on the effects of different amount of time spent in child care on Australian children. As this study is less comprehensively study in Australia, therefore, your participation in this study is greatly appreciated.

I would very pleased if you could sign the informed consent form attached to this letter and forward it to caregivers’ of your child.

Your consideration is highly appreciated

Thank you

Yours truly,

Nazariah Janon
PhD Student

**Appendix VII (First reminder to parents to return questionnaire –
Study I and Study II)**



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Study on “Effects of the amount of time in child-care on children’s cognitive and social development”

Dear Sir / Madam

With reference to the above study I had completed the cognitive tasks with your child, his cognitive ability scores will be analyzed with questionnaire from parents. However, my record shows that the questionnaire from his family is still not available. I would greatly appreciate if you can answer the questionnaire and mail it to me as soon as possible.

Your consideration is highly appreciated

Thank you

Yours truly,

Nazariah Janon
PhD Student

**Appendix VIII (Second reminder to parents to return questionnaire –
Study I and Study II)**



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Study on “Effects of the amount of time in child-care on children’s cognitive and social development”

Dear Sir / Madam,

With reference to the above study I sent you a reminder letter regarding parents’ questionnaire two weeks ago and my record shows that the questionnaire from your family is still not available. I would greatly appreciate if you can answer the questionnaire and mail it to me as soon as possible.

Your consideration is highly appreciated

Thank you

Yours truly,

Nazariah Janon
PhD Student

Appendix IX (Information Sheet for Parents and Director of Child Care Centres – Study II)

Information Sheet

My study titled “**Effects of the amount of time in child-care on children’s cognitive and social development**” which was conducted at the end of 2005, found that duration of time (i.e., the number of months) that children were in child-care significantly influenced their social behaviour. That is, rather than the hours per week children attended child-care, the number of months that children were enrolled in the centre had positive influence on their social development. The earlier children started in child-care, the more months they had spent in the centre and the lower their score in problems behaviour. Also the study demonstrated that relationship between amounts of time in child care and child development was moderated by family conflict and expressiveness.

As the results from Study I of my research project were interesting, I plan to continue it with a second phase. The objective of the second study (Study II) is to do a follow-up study, checking for any different findings as a result of changes in the children’s age, experiences and child-care arrangements. Also, examine effects of new child care and family related variables on child development.

As this is the first study of its kind in South Australia, and given the support of parents for study I, it is hoped that the child-care centre and parents will continue to give full support to Study II. This second study will provide more information to parents in understanding their children’s development.

Methods of Study

The methods that will be used in Study II include observation, psychological assessments and questionnaires. **Observation** is intended to collect data regarding the nature of the child-care centres, and the interaction between caregivers and children. **Cognitive test** (psychological assessments) will be used in order to assess the children’s cognitive abilities. Observation and administration of cognitive test will be conducted by researcher. **Questionnaires** will be used to collect information regarding family environment, family background and social behaviour of the children. Parents and teachers will be given the questionnaire and can take them home to complete.

Measures that will be used

1. *Early Childhood Environment Rating Scale (ECERS)* - Harms, Clifford and Cryer (2005). This observation scale is used as a guide to observing the general features of the children's classroom. Researcher is responsible to conduct the observation.
2. *Caregiver Interaction Scale (CIS)* - Arnett (1989). This scale provides a guide to observing caregiver-child interactions. The observation will be done by researcher. It will take about 2 hours for each of caregiver in the classroom.
3. *Differential Ability Scale (DAS)* - Elliot (1990). This is a cognitive ability scale that will be used as a means to assess the verbal ability of children. Only two subscales will be used and will take less than 10 minutes. The researcher will conduct the individual assessment in the classroom where he/she belongs to.
4. *Family Environment Scale (FES)* - Moss & Moss (1986). This is a scale to assess a family's social climate and it will be given to participating parents. It is a true/false scale and it will take less than 10 minutes to complete. Parents can answer the scale at home and return it in a reply paid envelop directly to researcher.
5. *Social Behaviour* - The Strengths and Difficulties Questionnaire - SDQ (Goodman, 1997) & The Adaptive Social Behaviour Inventory - ASBI (Scott & Hogan, 1987). These scales measure the social behavior of the children. These three Likert Scale questionnaires will be completed by teachers and parents. Both of these simple questionnaires will take less than 8 minutes to complete.
6. *Parenting Scale* - This is a scale developed by Arnold, O'Leary, Wolff and Acker (1993). It contains 30 items and to be rated on a 7-point Likert Scale. It measures the parenting styles of the family.
7. *GHQ-12* - This is a questionnaire developed by Goldberg (1978) that contains 12 items, to be rated on 4-point Likert Scale (0, 1, 2, & 3). This scale measures one's normal healthy function and the appearance of new phenomena of a distressing nature. This scale will be completed by parents and caregivers.
8. *Job Satisfaction* - Caregivers job satisfaction is measured by Job Satisfaction Scale (JSS) by Paul e. Spector (1985). It collects information regarding caregivers' satisfaction towards their job. It consists 36 items and will take less than 10 minute to complete.

Involvement

1. Caregivers are required to answer set of questionnaires that consist of different scales (i.e., SDQ & ASBI - for participated children that is less than 7 minutes for each questionnaire; GHQ and JSS - only a copy for each caregivers - less than 5 minutes)
2. Parents will complete set of questionnaires at home. All of the questionnaires will take approximately 20 -25 minutes.
3. Researcher will make two observations in the classroom (i.e., ECERS-R & CIS) and administering the cognitive abilities test (DAS) with children in the centre.

Ethical Consideration

The children's physiological and emotional states will be given priority and they will not be assessed until they are ready. For example, if a child is sleeping during

his/her schedule time for a cognitive abilities test, she/he will not be forced to wake-up and take the test. The researcher will wait until she/he wakes-up or will reschedule another time to administer the test. Parents will give informed consent on behalf of the children. Participants are free to withdraw from the study at any time. The School of Psychology's Ethics Committee has evaluated and approved the methods and procedures of the study. Any queries regarding ethics can be obtained from the Convener of the Psychology Department's Human Ethics Subcommittee, Dr. Paul Delfabbro by telephoning (08-8303 5744 or paul.delfabbro@psychology.edu.au).

Analysis and Reporting of Results

All information gathered will be treated as strictly confidential. The age, date of birth, gender and etc of the participants are only for researcher's identification purposes. The data will be analyzed by using statistical methods (correlations and multiple regressions). Upon the completion of this study, I will be pleased to discuss the results with those who are interested. Should participants have any queries regarding this study, they can contact either my mobile (04-3228 3837) or my supervisors Prof. John Taplin and Dr. Tahereh Ziaian who may be reached by telephoning (Prof. Taplin, 08-8303 5229 or Dr. Ziaian, 08-8302 1114) and email (john.taplin@adelaide.edu.au / tahereh.ziaian@unisa.edu.au).

Appendix X (Letter to Director of Child Care Centres - Study II)



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Dear Madam Director,

As supervisors, we are very encouraged by the response Nazariah has had to her Study I, examining the effects of amount of time in child-care on children's development. We are also very grateful for the help you have provided for this research project. The result of the study I is provided in this letter.

The study attempts not only examine the children during one particular stage of age but also intend to do follow-up after six months (will begin in April 2006). The goal of doing the Study II is to investigate if there is consistency in the children's cognitive and social development in six months time.

In relation to this, we would like to continue the project in your centre and more detail information is written in the information sheet. We hope that the great support from the centre and parents will be continued in the Study II.

Should you have queries, please feel free to contact us directly (Tel: Prof. Taplin -8303 5229; Dr. Ziaian - 8161 6915 and Nazariah - 0432283837) or by emailing john.taplin@adelaide.edu.au or tahereh.ziaian@adelaide.edu.au or nazariah.janon@student.adelaide.edu.au

Once again, thank you very much for your help in this project

Yours sincerely

Prof. John Taplin
Pro-Vice Chancellor (International)
 The University of Adelaide
 ADELAIDE

Dr. Tahereh Ziaian
Research Fellow
 Department of Paediatrics
 Women's & Children's Hospital

Appendix XI (Letter to Parents - Study II)



School of Psychology
 Level 4, Hughes Building
 THE UNIVERSITY OF ADELAIDE
 SA 5005
 AUSTRALIA
 Telephone: + 61 8 8303 5693
 Facsimile : + 61 8 8303 3770

Dear Parent,

My name is Nazariah Janon. I am a postgraduate student at the University of Adelaide who had, studying towards my PhD in Developmental Psychology. Title of my thesis is “Effects of the amount of time in child-care on children’s cognitive and social development”

The result from study I showed that amount of time in child care has significant effect on children’s cognitive and social development. More time in child care (especially high numbers of hours of child care in a week) has negative effect on children’s social development. However, family social climate moderates the negative effect of time in children’s social development.

In relation to findings in Study I, Study II is designed in order to do a follow-up and extension of the previous study. This means that besides replicate the same study I in study II for the seek of examining consistency and changes in six months, I also would like to study new variable that is interaction between caregiver(s) and children. My study attempts to examine how sensitive interaction between caregivers and children in the classroom affects children’s cognitive and social development in relation to the amount of time in child-care. Research has found that teacher’s sensitivity in the interactions between children and the teacher provides better cognitive and social developmental outcomes.

In Study II, children will be administered again with the cognitive assessment that will take only 5 to 8 minutes during their attendance in the centre. Parents’ involvements are also same like in the Study I that they are required to complete a set of questionnaire that will take about 10 to 13 minutes. The study is important to carry out because majority of children aged 2 to 4 spend most of their time in child-care while parents are at work and there are still many gaps in our understanding of the possible relations between amount of time in child-care and child development. To obtain the goal, a parent or guardian of children aged 2 ½ years old and their child, enrolled in child-care centre, will be asked to participate. This study will require about 20 – 30 minutes of your time, to complete questionnaires. Whereas, for your child, the study will require him/her to do less than 10 minutes cognitive tasks at the child-care centre.

Should you agree to participate in this study please sign the informed consent form and forward it to child's caregivers and I will collect from them. Soon after receiving your informed consent form, a set of questionnaires will be given to you.

The study has been approved by the Psychology Department's Ethics Committee, and any queries regarding ethics can contact the Convener of the Psychology Department's Human Ethics Subcommittee, Dr. Paul Delfabbro by telephoning (08-8303 5744 or paul.delfabbro@psychology.edu.au).

I assure you that all information gathered in the study will be treated strictly confidential. The age, date of birth and etc. are only for my identification purpose.

Should you have any queries regarding this study, please feel free to contact either myself at work (08-8303 6458) or at home (08-8165 2532) or my supervisors Prof. John Taplin and Dr. Tahereh Ziaian who may be reached by telephoning (08-8303 5229 – Prof. Taplin or 08-8161 6915 – Dr. Ziaian).

Upon the completion of this study, I will be pleased to discuss the result with those who are interested.

Thank you very much for your valuable time and co-operation

Yours sincerely

Nazariah Janon

Appendix XII (Informed Consent Form for Parents – Study II)

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

INFORMED CONSENT FORM*

I (name) _____

hereby consent to _____ (child's name) to take part in the research project entitled: **Effects of the amount of time in child-care on children's cognitive and social development**

I have read and understood the Information Sheet on the above project and understand that (my child/I) is being asked to (provide details of what is required of (the participant)).

I understand that (my child/I) may not directly benefit by taking part in this research.

I understand that while information gained in the study may be published, (my child/I) will not be identified and all individual information will remain confidential.

I understand that I can withdraw (my child) from the study at any stage up until the end of the collection of data.

I understand that there will be no payment for (my child) taking part in this study.

I am aware that I should retain a copy of the Consent Form for future reference.

I consent to (my child) being involved in this project.

Signed: _____

Date: _____

Relationship to child: _____

** Please forward the complete informed consent form to the caregiver of your child.*

Appendix XIII (The sample of questionnaire for parents - Study I)

THE UNIVERSITY OF ADELAIDE SCHOOL OF PSYCHOLOGY

Questionnaire for Parents

Thank you for spending time to complete these questionnaires.

In relation to your interest to participate in my Study I title “Effects of amount of time in child-care on children’s cognitive and social development”, enclosed is a set of questionnaire that would to be completed.

Instructions:

- Please **DON’T** write your name anywhere on the questionnaires.
- Please answer **ALL** the questions and try to answer the questions in order.
- Once you have finished, please put the questionnaires in the enveloped provided, seal it and RETURN it to researcher (address is as printed on the envelope).

All of the information that you provide in these questionnaires will be treated **CONFIDENTIAL** and **ANONYMOUS**

Thank you

SECTION 1

1. Which of the following best describes your relationship to the child in this study?
 Natural mother Natural father
 Stepmother Stepfather
 Other (please describe) _____

2. Which of the following best describes the parents living in the child's household?
 Two natural parents Mother and stepfather/defacto
 Father and stepmother/defacto Mother alone
 Father alone Other (please describe) _____

3. What is the usual occupation of the parents in the child's household?
 Mother _____ Father _____

4. Are the parents in the child's household currently in paid employment?
 Mother Yes No Father Yes No

5. How many children do you have? _____

6. What is the age of the youngest child? _____

7. What is the age of the oldest child? _____

8. What are parents' countries of origin?

Mother _____ Father _____

9. What are the parents highest completed level of schooling?

Mother

- Primary school
 Some years of high school
 Year 12, Matric or equivalent
 Technical, trade or TAFE certificate, or some university
 Completed university qualifications

Father

- Primary school
 Some years of high school
 Year 12, Matric or equivalent
 Technical, trade or TAFE certificate, or some university
 Completed university qualifications

10. What are the parents age?

Mother _____ Father _____

11. Does your family receive any pension or benefit?

Yes No

If YES please specify: _____

12. What is the sex of the child in this study?

Male

Female

13. What is the date of birth of the child in this study?

14. What is your child's first language at home?

English Other If other, which language? _____

15. Does the child have any current illness or disability?

Yes No

If YES, please write down the name/s of this/these illness/es or disability/ies:

1. _____

2. _____

16. What age did the child start going to a child-care?

17. What other types of child-care does the child attend in addition to the present child-care centre?

	Yes	No
Family Day Care <input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Occasional care <input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In Home Care <input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grandparents <input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relatives <input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Babysitters <input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Older Siblings <input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If YES, how many hours _____

18. How many days per week do you send the child to the centre?

19. How many hours your child spends in child-care everyday?

SECTION II

Instructions: There are 90 statements in this booklet. They are statements about families. You are to decide which of these statements are true of your family and which are false. If you think the statement is True or mostly True of your family, make an X in the box labelled T (true). If you think the statement is False or mostly False of your family, make an X in the box labelled F (false).

Your may feel that some of the statements are true for some family members and false for others. Mark T if the statement is true for most members. Mark F if the statement is false for most members are evenly divided, decide what is the stronger overall impression and answer accordingly.

Remember, we would like to know what your family seems like to you. So do not try to figure out how other members see your family, but do give us your general impression of your family for each statement.

Statements	T	F
1. Family members really help and support one another		
2. Family members often keep their feelings to themselves		
3. We fight a lot in our family		
4. We don't do things on our own very often in our family		
5. We feel it is important to be the best at what ever you do		
6. We often talk about political and social problems		
7. We spend most weekends and evenings at homes		
8. Family members attend church, synagogue, or Sunday School fairly often		
9. Activities in our family are pretty carefully planned		
10. Family members are rarely ordered around		
11. We often seem to be killing time at home		
12. We say anything we want to around home		
13. Family members rarely become openly angry		
14. In our family, we are strongly encouraged to be independent		
15. Getting ahead in life is very important in our family		
16. We rarely go to lectures, plays or concerts		
17. Friends often come over for dinner or to visit		
18. We don't say prayers in our family		
19. We are generally very neat and orderly		
20. There are very few rules to follow in our family		
21. We put a lot of energy into what we do at home		
22. It's hard to "blow off steam" at home without upsetting somebody		
23. Family members sometimes get so angry they throw things		
24. We think things out for ourselves in our family		
25. How much money a person makes is not very important to us		

26. Learning about new and different things is very important in our family		
27. Nobody in our family is active in sports, Little League, bowling, etc		
28. We often talk about religious meaning of Christmas, Passover, or other holidays.		
29. It's often hard to find things when you need them in our household		
30. There is one family member who makes most of the decisions		
31. There is a feeling of togetherness in our family		
32. We tell each other about our personal problems		
33. Family members hardly ever lose their tempers		
34. We come and go as we want to in our family		
35. We believe in competition and "may the best man win"		
36. We are not that interested in cultural activities		
37. We often go to movies, sports events, camping, etc		
38. We don't believe in heaven or hell		
39. Being on time is very important in our family		
40. There are set ways of doing things at home		
41. We rarely volunteer when something has to be done at home		
42. If we feel like doing something on the spur of the moment we often just pick up and go		
43. Family members often criticize each other		
44. There is very little privacy in our family		
45. We always strive to do things just a little better the next time		
46. We rarely have intellectual discussions		
47. Everyone in our family has a hobby or two		
48. Family members have strict ideas about what is right and wrong		
49. People change their minds often in our family		
50. There is a strong emphasis on following rules in our family		
51. Family members really back each other up		
52. Someone usually gets upset if you complain in our family		
53. Family members sometimes hit each other		
54. Family members almost always rely on themselves, when a problem comes up		
55. Family members rarely worry about about job promotions, school grades, etc		
56. Someone in our family plays a musical instrument		
57. Family members are not very involved in recreational activities outside work or school		
58. We believe there are some things you just have to take on faith		
59. Family members make sure their rooms are neat		
60. Everyone has an equal say in family decisions		

61. There is very little group spirit in our family		
62. Money and paying bills is openly talked about in our family		
63. If there is a disagreement in our family, we try hard to smooth things over and keep the peace		
64. Family members strongly encouraged each other to stand up for their rights		
65. In our family, we don't try that hard to succeed		
66. Family members often go to the library		
67. Family members sometimes attend courses or take lessons for some hobby or interest (outside of school)		
68. In our family each person has different ideas about what is right and wrong		
69. Each person's duties are clearly defined in our family		
70. We can do whatever we want to in our family		
71. We really get along well with each other		
72. We are usually careful about what we say to each other		
73. Family members often try to one-up or out-do each other		
74. It's hard to be by yourself without hurting someone's feelings in our household		
75. "Work before play" is the rule in our family		
76. Watching T.V. is more important than reading in our family		
77. Family members go out a lot		
78. The Bible is a very important book in our home		
79. Money is not handled very carefully in our family		
80. Rules are pretty inflexible in our household		
81. There is plenty of time and attention for everyone in our family		
82. There are a lot of spontaneous discussions in our family		
83. In our family, we believe you don't ever get anywhere by raising your voice		
84. We are not really encouraged to speak up for ourselves in our family		
85. Family members are often compared with others as to how well they are doing at work or school		
86. Family members really like music, art and literature		
87. Our main form of entertainment is watching T.V. or listening to the radio		
88. Family members believe that if you sin you will be punished		
89. Dishes are usually done immediately after eating		
90. You can't get away with much in our family		

SECTION III*

For each item, please mark the box for **Not True (1)**, **Somewhat True (2)** or **Certainly True (3)**. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

	1	2	3
1. Considerate of other people's feeling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Often argumentative with adults	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Often volunteers to help others (parents, teachers other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Can stop and think things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Can be spiteful to others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*© Robert Goodman, 1999

Appendix XIV (The sample of questionnaire for parents - Study II)**THE UNIVERSITY OF ADELAIDE
SCHOOL OF PSYCHOLOGY****Questionnaire for Parents**

Thank you for spending time to complete these questionnaires.

In relation to your interest to participate in my study II title “Effects of amount of time in child-care on children’s cognitive and social development”, enclosed is a set of questionnaire that would be completed.

Instructions:

- Please **DON’T** write your name anywhere on the questionnaires.
- Please answer **ALL** the questions and try to answer the questions in order.
- Once you have finished, please put the questionnaires in the envelope provided, seal it and RETURN it to researcher (address is as printed on the envelope).

All of the information that you provide in these questionnaires will be treated **CONFIDENTIAL** and **ANONYMOUS**

Thank you

Today's date: _____

SECTION 1

1. Which of the following best describes your relationship to the child in this study?
- Natural mother Natural father
 Stepmother Stepfather
 Other (please describe) _____
2. Which of the following best describes the parents living in the child's household?
- Two natural parents Mother and stepfather/defacto
 Father and stepmother/defacto Mother alone
 Father alone Other (please describe) _____
3. What is the usual occupation of the parents in the child's household?
- Mother _____ Father _____
20. Are the parents in the child's household currently in paid employment?
- Mother Yes No Father Yes No
21. How many children do you have? _____
22. What is the age of the youngest child? _____
23. What is the age of the oldest child? _____
24. What are parents' countries of origin?
- Mother _____ Father _____
25. What are the parents highest completed level of schooling?
- | Mother | <input type="checkbox"/> | Father | <input type="checkbox"/> |
|--|--------------------------|--|--------------------------|
| Primary school | <input type="checkbox"/> | Primary school | <input type="checkbox"/> |
| Some years of high school | <input type="checkbox"/> | Some years of high school | <input type="checkbox"/> |
| Year 12, Matric or equivalent | <input type="checkbox"/> | Year 12, Matric or equivalent | <input type="checkbox"/> |
| Technical, trade or TAFE certificate, or some university | <input type="checkbox"/> | Technical, trade or TAFE certificate, or some university | <input type="checkbox"/> |
| Completed university qualifications | <input type="checkbox"/> | Completed university qualifications | <input type="checkbox"/> |
26. What are the parents age?
- Mother _____ Father _____
27. Does your family receive any pension or benefit?
- Yes No
- If YES please specify: _____
28. What is the sex of the child in this study?
- Male Female
29. What is the date of birth of the child in this study?

30. What is your child's first language at home?
- English Other If other, which language? _____
31. Does the child have any current illness or disability?
- Yes No
- If YES, please write down the name/s of this/these illness/es or disability/ies:
1. _____
2. _____
32. What age did the child start going to a child-care? _____
33. Have you ever stopped sending your child to the centre in between date of starting and present time? Yes No
34. If YES how long you have stopped? _____
35. What other types of child-care does the child attend in addition to the present child-care centre?
- | | Yes | No |
|-----------------|--------------------------|--------------------------|
| Family Day Care | <input type="checkbox"/> | <input type="checkbox"/> |
| Occasional care | <input type="checkbox"/> | <input type="checkbox"/> |
| In Home Care | <input type="checkbox"/> | <input type="checkbox"/> |
| Grandparents | <input type="checkbox"/> | <input type="checkbox"/> |
| Relatives | <input type="checkbox"/> | <input type="checkbox"/> |
| Babysitters | <input type="checkbox"/> | <input type="checkbox"/> |
| Older Siblings | <input type="checkbox"/> | <input type="checkbox"/> |
- If YES, how many day(s) per week _____
- How many hour(s) per day _____
36. How many days per week do you send the child to the child-care centre?
- _____
37. Have you changed the number of days per week do you send the child to the child-care centre between date of starting and present time? Yes No
- If YES please described _____
38. How many hours your child spends in child-care centre everyday?
- _____
39. Have you changed the hours your child spends in child-care centre everyday between date of starting and present time? Yes No
- If YES please described _____

SECTION II

Instructions: There are 90 statements in this booklet. They are statements about families. You are to decide which of these statements are true of your family and which are false. If you think the statement is True or mostly True of your family, make an X in the box labelled T (true). If you think the statement is False or mostly False of your family, make an X in the box labelled F (false).

Your may feel that some of the statements are true for some family members and false for others. Mark T if the statement is true for most members. Mark F if the statement is false for most members are evenly divided, decide what is the stronger overall impression and answer accordingly.

Remember, we would like to know what your family seems like to you. So do not try to figure out how other members see your family, but do give us your general impression of your family for each statement.

Statements	T	F
31. Family members really help and support one another		
32. Family members often keep their feelings to themselves		
33. We fight a lot in our family		
34. We don't do things on our own very often in our family		
35. We feel it is important to be the best at whatever you do		
36. We often talk about political and social problems		
37. We spend most weekends and evenings at home		
38. Family members attend church, synagogue, or Sunday School fairly often		
39. Activities in our family are pretty carefully planned		
40. Family members are rarely ordered around		
41. We often seem to be killing time at home		
42. We say anything we want to around home		
43. Family members rarely become openly angry		
44. In our family, we are strongly encouraged to be independent		
45. Getting ahead in life is very important in our family		
46. We rarely go to lectures, plays or concerts		
47. Friends often come over for dinner or to visit		
48. We don't say prayers in our family		
49. We are generally very neat and orderly		
50. There are very few rules to follow in our family		
51. We put a lot of energy into what we do at home		
52. It's hard to "blow off steam" at home without upsetting somebody		
53. Family members sometimes get so angry they throw things		
54. We think things out for ourselves in our family		
55. How much money a person makes is not very important to us		

56. Learning about new and different things is very important in our family		
57. Nobody in our family is active in sports, Little League, bowling, etc		
	T	F
58. We often talk about religious meaning of Christmas, Passover, or other holidays.		
59. It's often hard to find things when you need them in our household		
60. There is one family member who makes most of the decisions		
31. There is a feeling of togetherness in our family		
32. We tell each other about our personal problems		
91. Family members hardly ever lose their tempers		
92. We come and go as we want to in our family		
93. We believe in competition and "may the best man win"		
94. We are not that interested in cultural activities		
95. We often go to movies, sports events, camping, etc		
96. We don't believe in heaven or hell		
97. Being on time is very important in our family		
98. There are set ways of doing things at home		
99. We rarely volunteer when something has to be done at home		
100.If we feel like doing something on the spur of the moment we often just pick up and go		
101.Family members often criticize each other		
102.There is very little privacy in our family		
103.We always strive to do things just a little better the next time		
104.We rarely have intellectual discussions		
105.Everyone in our family has a hobby or two		
106.Family members have strict ideas about what is right and wrong		
107.People change their minds often in our family		
108.There is a strong emphasis on following rules in our family		
109.Family members really back each other up		
110.Someone usually gets upset if you complain in our family		
111.Family members sometimes hit each other		
112.Family members almost always rely on themselves, when a problem comes up		
113.Family members rarely worry about job promotions, school grades, etc		
114.Someone in our family plays a musical instrument		
115.Family members are not very involved in recreational activities outside work or school		
116.We believe there are some things you just have to take on faith		
117.Family members make sure their rooms are neat		

118. Everyone has an equal say in family decisions		
119. There is very little group spirit in our family		
120. Money and paying bills is openly talked about in our family		
121. If there is a disagreement in our family, we try hard to smooth things over and keep the peace		
122. Family members strongly encouraged each other to stand up for their rights		
123. In our family, we don't try that hard to succeed		
124. Family members often go to the library		
125. Family members sometimes attend courses or take lessons for some hobby or interest (outside of school)		
126. In our family each person has different ideas about what is right and wrong		
127. Each person's duties are clearly defined in our family		
128. We can do whatever we want to in our family		
129. We really get along well with each other		
130. We are usually careful about what we say to each other		
131. Family members often try to one-up or out-do each other		
132. It's hard to be by yourself without hurting someone's feelings in our household		
133. "Work before play" is the rule in our family		
134. Watching T.V. is more important than reading in our family		
135. Family members go out a lot		
136. The Bible is a very important book in our home		
137. Money is not handled very carefully in our family		
138. Rules are pretty inflexible in our household		
139. There is plenty of time and attention for everyone in our family		
140. There are a lot of spontaneous discussions in our family		
141. In our family, we believe you don't ever get anywhere by raising your voice		
142. We are not really encouraged to speak up for ourselves in our family		
143. Family members are often compared with others as to how well they are doing at work or school		
144. Family members really like music, art and literature		
145. Our main form of entertainment is watching T.V. or listening to the radio		
146. Family members believe that if you sin you will be punished		
147. Dishes are usually done immediately after eating		
148. You can't get a way with much in our family		

SECTION III*

For each item, please mark the box for **Not True (1)**, **Somewhat True (2)** or **Certainly True (3)**. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

	1	2	3
1. Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Often argumentative with adults	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Often volunteers to help others (parents, teachers other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Can stop and think things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Can be spiteful to others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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SECTION IV*

Please circle the number/response that best describes your child.

1 = Rarely or Never 2 = Sometimes 3 = Almost Always

1. Understand others' feelings, like when they are happy, sad or mad	1	2	3
2. Is helpful to other children	1	2	3
3. Is obedient and compliant	1	2	3
4. When you give him/her an idea for playing, he/she frowns, shrugs shoulder, pouts or stamp foot	1	2	3
5. Follows rules in games	1	2	3
6. Gets upset when you don't pay enough attention	1	2	3
7. Is sympathetic toward other children's distress, tries to comfort others when they are upset.	1	2	3
8. Waits her/his turn in games or other activities	1	2	3
9. Is open and direct about what he/she wants	1	2	3
10. Cooperates with your request	1	2	3
11. Can easily get others children to pay attention to him/her	1	2	3
12. Says nice or friendly things to others	1	2	3
13. Will join a group of children playing	1	2	3
14. In social activities, tends to just watch others	1	2	3
15. Follows household or family rules	1	2	3
16. Says "please" and "thank you" when reminded	1	2	3
17. Asks or wants to go play with other children	1	2	3
18. Is calm and easy-going	1	2	3
19. Plays games and talks with other children	1	2	3
20. Shares toys or possessions	1	2	3
21. Teases other children, calls them names	1	2	3
22. Is confident with others people	1	2	3
23. Prevents others children from carrying out routines	1	2	3
24. Tends to be proud of things she/he does	1	2	3
25. Accepts changes without fighting against them or becoming upset	1	2	3
26. Bullies other children	1	2	3
27. Is interested in many and different things	1	2	3
28. Is worried about not getting enough	1	2	3
29. Is bossy, needs to have his/her way	1	2	3
30. Enjoys talking with you	1	2	3

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SECTION V*

The study would like to know if you had any medical complaints and how your health has been in general, over the last few weeks. Please answer ALL the questions simply by **CIRCLING** the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.

HAVE YOU RECENTLY:

1. been able to concentrate on what ever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
2. lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
3. felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
4. felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
5. felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
6. felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
7. been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
8. been able to face up to your problems?	More so than usual	Same as usual	Less able than usual	Much less able
9. been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
10. been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
11. been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
12. been feeling reasonably happy, all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual

*©Goldberg,1978

SECTION VI

Instructions:

At one time or another, all children misbehave or do things that could be harmful, that are “wrong” or that parents don’t like. Examples include: hitting someone, whining, throwing food and etc. Parents have many different ways or styles of dealing with these types of problems. Below are items that describe some styles of parenting

PLEASE TICK ONLY ONE BOX FOR EACH ITEM.

An example item is shown below. In the example, if you mostly used the way shown on the right side of the page (i.e., I decide how much my child eats), you would tick the option shown.

SAMPLE ITEM	1 Always this way	2 Almost always this way	3 Mostly this way	4 Both ways equally	5 Mostly this way	6 Almost always this way	7 Always this way	
At mealtime I let my child decide how much to eat							√	At mealtime I decide how much my child eats
1. When my child misbehaves I do something right away								When my child misbehaves I do something about it later
2. Before I do something about a problem I give my child several reminders or warnings								Before I do something about problem I use only one reminder or warning
3. When I'm upset or under stress I am picky and on my child's back								When I'm upset or under stress I am no more picky than usual
4. When I tell my child not to do something I say very little								When I tell my child not to do something I say a lot
5. When my child pesters me I can ignore the pestering								When my child pesters me I can't ignore the pestering

	1 Always this way	2 Almost always this way	3 Mostly this way	4 Both ways equally	5 Mostly this way	6 Almost always this way	7 Always this way	
6. When my child misbehaves I usually get into long argument with my child								When my child misbehaves I don't get into argument
7. I threaten to do things that I am sure I can carry out								I threaten to do things that I know I won't actually do
8. I am the kind of parent that sets limits on what my child is allowed to do								I am the kind of parent that lets my child do whatever he or she wants
9. When my child misbehaves I give my child a long lecture								When my child misbehaves I keep my talks short and to the point
10. When my child misbehaves I raise my voice or yell								When my child misbehaves I speak to my child calmly
11. If saying no doesn't work right away I take some other kind of action								If saying no doesn't work right away I keep talking and try to get through to my child
12. When I want my child to stop doing something I firmly tell my child to stop								When I want my child to stop doing something I coax or beg my child to stop
13. When my child is out of my sight I often don't know what my child is doing								When my child is out of my sight I always have a good idea of what my child is doing

	1 Always this way	2 Almost always this way	3 Mostly this way	4 Both ways equally	5 Mostly this way	6 Almost always this way	7 Always this way	
14. After there is been a problem with my child I often hold a grudge								After there is been a problem with my child things get back to normal quickly
15. When we are not at home I handle my child the way I do at home								When we are not at home I let my child get away with a lot more
16. When my child does something I don't like. I do something about it every time it happens								When my child does something I don't like I often let it go
17. When there's a problem with my child things build up and I do things I don't mean to do								When there is a problem with my child things don't get out of hand
18. When my child misbehaves, I spank, slap, grab or hit my child never or rarely								When my child misbehaves, I spank, slap, grab, or hit my child most of the time
19. When my child doesn't do what I ask I often let it go or end up doing it myself								When my child doesn't do what I ask I take some other action
20. When I give a fair threat or warning I often don't carry it out								When I give fair threat or warning I always do what I said

	1 Always this way	2 Almost always this way	3 Mostly this way	4 Both ways equally	5 Mostly this way	6 Almost always this way	7 Always this way	
19. When my child doesn't do what I ask I often let it go or end up doing it myself								When my child doesn't do what I ask I take some other action
20. When I give a fair threat or warning I often don't carry it out								When I give fair threat or warning I always do what I said
21. If saying no doesn't work I take some other kind of action								If saying no doesn't work I offer my child something nice so he/she will behave
22. When my child misbehaves I handle it without getting upset								When my child misbehaves I get so frustrated or angry that my child can see I'm upset
23. When my child misbehaves I make my child tell me why he/she did it								When my child misbehaves I say "No" or take some other action
24. If my child misbehaves and then acts sorry I handle the problem like I usually would								If my child misbehaves and then acts sorry I let it go that time
25. When my child misbehaves I rarely use bad language or curse								When my child misbehaves I almost always use bad language

	1 Always this way	2 Almost always this way	3 Mostly this way	4 Both ways equally	5 Mostly this way	6 Almost always this way	7 Always this way	
26. When I say my child can't do something I let my child do it anyway								When I say my child can't do something I stick to what I said
27. When I have to handle a problem with my child I tell my child I am sorry about it								When I have to handle a problem with my child I don't say I'm sorry
28. When my child does something I don't like, I insult my child say mean things or call my child names never or rarely								When my child does something I don't like I insult my child, say mean things, or call my child names most of the time
29. If my child talks back or complains when I handle a problem I ignore the complaining and stick to what I said								If my child talks back or complains when I handle a problem, I give my child a talk about not complaining
30. If my child gets upset when I say "No" I back down and give in to my child								If my child gets when I "No" I stick to what I said

Appendix XV (Questionnaire for Caregivers - Study I and Study II)

THE UNIVERSITY OF ADELAIDE SCHOOL OF PSYCHOLOGY

Questionnaire for children's social behavior (completed by child-care workers)

Thank you for spending time to complete these questionnaires.

In relation to your participation in my study II title "Effects of amount of time in child-care on children's cognitive and social development", enclosed are two sections of questionnaire that required to be completed for participated children.

Instructions:

- The questionnaire will take approximately 10 minutes to complete.
- Please answer **ALL** the questions and try to answer the questions in order.
- Once you have finished, please return all the questionnaires to the researcher

All of the information that you provide in these questionnaires will be treated
CONFIDENTIAL and **ANONYMOUS**

Thank you

SECTION I*

Please circle the number/response that best describes your child.

1 = Rarely or Never **2 = Sometimes** **3 = Almost Always**

1. Understand others' feelings, like when they are happy, sad or mad	1	2	3
2. Is helpful to other children	1	2	3
3. Is obedient and compliant	1	2	3
4. When you give him/her an idea for playing, he/she frowns, shrugs shoulder, pouts or stamp foot	1	2	3
5. Follows rules in games	1	2	3
6. Gets upset when you don't pay enough attention	1	2	3
7. Is sympathetic toward other children's distress, tries to comfort others when they are upset.	1	2	3
8. Waits her/his turn in games or other activities	1	2	3
9. Is open and direct about what he/she wants	1	2	3
10. Cooperates with your request	1	2	3
11. Can easily get others children to pay attention to him/her	1	2	3
12. Says nice or friendly things to others	1	2	3
13. Will join a group of children playing	1	2	3
14. In social activities, tends to just watch others	1	2	3
15. Follows household or family rules	1	2	3
16. Says "please" and "thank you" when reminded	1	2	3
17. Asks or wants to go play with other children	1	2	3
18. Is calm and easy-going	1	2	3
19. Plays games and talks with other children	1	2	3
20. Shares toys or possessions	1	2	3
21. Teases other children, calls them names	1	2	3
22. Is confident with others people	1	2	3
23. Prevents others children from carrying out routines	1	2	3
24. Tends to be proud of things she/he does	1	2	3
25. Accepts changes without fighting against them or becoming upset	1	2	3
26. Bullies other children	1	2	3
27. Is interested in many and different things	1	2	3
28. Is worried about not getting enough	1	2	3
29. Is bossy, needs to have his/her way	1	2	3
30. Enjoys talking with you	1	2	3

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SECTION II*For each item, please mark the box for **Not True (1)**, **Somewhat True (2)** or **Certainly True (3)**. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

	1	2	3
1. Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Often argumentative with adults	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Often volunteers to help others (parents, teachers other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Can stop and think things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Can be spiteful to others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Appendix XVI (Personal questionnaire for caregivers - Study II)

THE UNIVERSITY OF ADELAIDE
SCHOOL OF PSYCHOLOGY

Questionnaire for Child-care workers

Thank you for spending time to complete these questionnaires.

Instructions:

- Please **DON'T** write your name anywhere on the questionnaires
- **BEGIN** with Section I and follow by Section II and III
- All sections will take approximately 8 to 10 minutes to complete.
- Please answer **ALL** the questions and try to answer the questions in order.
- Once you have finished, please return all the questionnaires to the researcher

All of the information that you provide in these questionnaires will be treated
CONFIDENTIAL and **ANONYMOUS**

Today's date:
SECTION I

1. What is your date of birth? _____
2. What is your sex? Male or Female (*please circle*)
3. What is your highest completed level of schooling?
 - Primary school θ
 - Some years of high school θ
 - Year 12, Matric or equivalent θ
 - Certificate Diploma in Children Services from TAFE θ
 - Completed university qualifications θ
4. When did you start working in this centre? _____
5. How many hours do you work everyday? _____
6. How many days do you work in a week? _____
7. Have you participated in workshop(s) organize by centre or outside organization in year 2005 and 2006 ? Yes / No (*please circle*)
8. If Yes what is/are the workshop(s) _____
9. What is the group size of the classroom _____
10. What is the ratio of teacher : child in the classroom

SECTION II*

The study would like to know if you had any medical complaints and how your health has been in general, over the last few weeks. Please answer ALL the questions simply by CIRCling the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.

HAVE YOU RECENTLY:

- | | | | | |
|---|--------------------|---------------------|------------------------|----------------------|
| 13. been able to concentrate on what ever you're doing? | Better than usual | Same as usual | Less than usual | Much less than usual |
| 14. lost much sleep over worry? | Not at all | No more than usual | Rather more than usual | Much more than usual |
| 15. felt that you are playing a useful part in things? | More so than usual | Same as usual | Less useful than usual | Much less useful |
| 16. felt capable of making decisions about things? | More so than usual | Same as usual | Less so than usual | Much less capable |
| 17. felt constantly under strain? | Not at all | No more than usual | Rather more than usual | Much more than usual |
| 18. felt you couldn't overcome your difficulties? | Not at all | No more than usual | Rather more than usual | Much more than usual |
| 19. been able to enjoy your normal day-to-day activities? | More so than usual | Same as usual | Less so than usual | Much less than usual |
| 20. been able to face up to your problems? | More so than usual | Same as usual | Less able than usual | Much less able |
| 21. been feeling unhappy and depressed? | Not at all | No more than usual | Rather more than usual | Much more than usual |
| 22. been losing confidence in yourself? | Not at all | No more than usual | Rather more than usual | Much more than usual |
| 23. been thinking of yourself as a worthless person? | Not at all | No more than usual | Rather more than usual | Much more than usual |
| 24. been feeling reasonably happy, all things considered? | More so than usual | About same as usual | Less so than usual | Much less than usual |

*Goldberg (1978)

SECTION III*

Please circle the one number for each question that comes closest to reflecting your opinion about it

1 = Disagree very much	4 = Agree slightly						
2 = Disagree moderately	5 = Agree moderately						
3 = Disagree slightly	6 = Agree very much						
1	I feel I am being paid a fair amount for the work I do	1	2	3	4	5	6
2	There is really too little chance for promotion on my job	1	2	3	4	5	6
3	My supervisor is quite competent in doing his/her job	1	2	3	4	5	6
4	I am not satisfied with the benefits I receive	1	2	3	4	5	6
5	When I do a good job, I receive the recognition for it that I should receive	1	2	3	4	5	6
6	Many of our rules and procedures make doing a good job difficult	1	2	3	4	5	6
7	I like the people I work with	1	2	3	4	5	6
8	I sometimes feel my job is meaningless	1	2	3	4	5	6
9	Communications seem good within this organization	1	2	3	4	5	6
10	Raises are too few and far between	1	2	3	4	5	6
11	Those who do well on the job stand a fair chance of being promoted	1	2	3	4	5	6
12	My supervisor is unfair to me	1	2	3	4	5	6
13	The benefits we receive are as good as most other organizations offer.	1	2	3	4	5	6
14	I do not feel that the work I do is appreciated	1	2	3	4	5	6
15	My efforts to do a good job are seldom blocked by red tape	1	2	3	4	5	6
16	I find I have to work harder at my job because of the incompetence of people I work with	1	2	3	4	5	6
17	I like doing the things I do at work	1	2	3	4	5	6
18	The goals of this organization are not clear to me	1	2	3	4	5	6
19	I feel unappreciated by the organization when I think about what they pay me	1	2	3	4	5	6
20	People get ahead as fast here as they do in other places	1	2	3	4	5	6
21	My supervisor shows too little interest in the feelings of subordinates	1	2	3	4	5	6
22	The benefit package we have is equitable	1	2	3	4	5	6
23	There are few rewards for those who work here	1	2	3	4	5	6
24	I have too much to do at work	1	2	3	4	5	6

1 = Disagree very much
 2 = Disagree moderately
 3 = Disagree slightly
 4 = Agree slightly
 5 = Agree moderately
 6 = Agree very much

25	I enjoy my co-workers	1	2	3	4	5	6
26	I often feel that I do not know what is going on with the organization	1	2	3	4	5	6
27	I feel a sense of pride in doing my job	1	2	3	4	5	6
28	I feel satisfied with my chances for salary increases	1	2	3	4	5	6
29	There are benefits we do not have which we should have	1	2	3	4	5	6
30	I like my supervisor	1	2	3	4	5	6
31	I have too much paperwork	1	2	3	4	5	6
32	I don't feel my efforts are rewarded the way they should be	1	2	3	4	5	6
33	I am satisfied with my chances for promotion	1	2	3	4	5	6
34	There is too much bickering and fighting at work	1	2	3	4	5	6
35	My job is enjoyable	1	2	3	4	5	6
36	Work assignments are not fully explained	1	2	3	4	5	6

* Spector (1994)

Appendix XVII (Descriptive Statistics)

Descriptive Statistics

	Frequency	Percentage
1. Age children started child care (N 131) <ul style="list-style-type: none"> • 1 – 12 months • 13 – 24 months • 25 – 36 months • 37 – 48 months 	87 28 10 6	66 21 8 5
2. Caregivers qualification (N = 145) <ul style="list-style-type: none"> • Some years of high school • Year 12, Matric or equivalent θ • Certificate Diploma in Children Services from TAFE • Completed university qualifications 	6 7 87 45	4 5 60 31
3. Relationship with the participating children (N = 74) <ul style="list-style-type: none"> • Natural mother • Step mother • Natural father • Step father 	69 0 5 0	93 0 7 0
4. Cultural background of mothers Study I (N=131) <ul style="list-style-type: none"> a. Non-immigrant (White Australian) b. Immigrant (Asian and European) Study II (N=74) <ul style="list-style-type: none"> • Non-immigrant (White Australian) • Immigrant (Asian and European) 	119 12 70 4	91 9 95 5
5. Cultural background of fathers Study I (N=124) <ul style="list-style-type: none"> a. Non-immigrant (White Australian) b. Immigrant (Asian and European) Study II (N=72) <ul style="list-style-type: none"> • Non-immigrant (White Australian) • Immigrant (Asian and European) 	112 12 66 6	90 10 92 8